Montana Outdoors

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THE COVER: As the sun skims the rim of the river's breaks to the southeast, the sound of geese calling loudly from a river island is heard. Suddenly, the volume, intensity and speed increase--a signal of the first flock taking wing. Ron Jenkins' front cover painting beautifully depicts this bird so many of us hunt, photograph or simply admire. For more information on the Canada goose--one of the most remarkable game birds in North America--turn to page 15 for Tom Hinz' article, "Honker!" Not all of nature's shades are shimmering blues or brilliant golds or enticing greens, as Craig Sharpe's back cover photo illustrates. For more of his work on the "Subtle Shades of Nature," turn to page 22.

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The Editor's Column

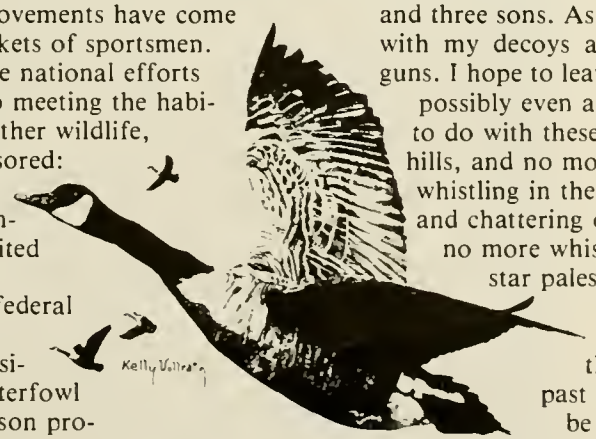
Goose hunting--for those who pursue it seriously--is an all-or-nothing proposition. It requires a lot of time, skill, patience and occasionally elbow grease--as anyone who has ever dug a goose pit will attest. Even then, there is no guarantee of success. The weather, the birds' unpredictable behavior or just plain bad luck can play havoc with a perfect setup. But if the investment in time and energy is great, so is the potential reward. A fat Canada goose, complete with plum stuffing and wild rice, can send a wild game fancier into fits of ecstasy.

Thanks to sound management (see Tom Hinz' article elsewhere in this issue), southeastern Montana hunters can expect to put more Canada geese on the dinner table in years to come. The resident goose flock in the lower Yellowstone River area now stands at more than 5,000, an increase of several hundred percent since the 1950s. The outlook for Canada geese in other parts of Montana is equally promising.

Nationwide, the Canada goose is one of wildlife management's greatest success stories, rivaling the wild turkey, the whitetail and the pronghorn. For example, the Mississippi Valley population of Canadas--reduced to 30,000 birds in 1946--now stands at nearly half a million. The Canada goose harvest in the United States in 1977 was more than 1 million birds.

To what do we owe this remarkable increase in Canada goose numbers over the past three or four decades? On the biological side, many Canada geese nest in the far North, where breeding grounds remain relatively undisturbed. Also, the birds have adapted readily to the intensive agriculture that now characterizes their migration routes; like mallards, Canada geese thrive on waste grain left after harvest. On the management side, careful monitoring of populations, regulation of harvest, establishment of a series of refuges throughout the migration corridors and creation and improvement of nesting habitat both in the United States and Canada have all contributed to the success of the species.

The dollars for these improvements have come almost entirely from the pockets of sportsmen. Through the years, only three national efforts have been dedicated solely to meeting the habitat needs of waterfowl and other wildlife, and they are all hunter-sponsored: the federal Migratory Bird Stamp (duck stamp), Pittman-Robertson and Ducks Unlimited programs.



Since 1934, receipts from federal duck stamp sales have been channeled directly into acquisition and improvement of waterfowl habitat. The Pittman-Robertson program, which dates back to 1937, is financed by hunters and shooters through a federal excise tax on sporting arms, ammunition and archery equipment (elsewhere in this issue, look for a discussion of recent threats to this program). The money is used primarily for wildlife inventories, habitat restoration, research and hunter education. Ducks Unlimited, a private organization, was founded three decades ago for the primary purpose of acquiring and maintaining waterfowl breeding areas in the Canadian prairie provinces. Nearly half of its revenues are the result of fund-raising dinners conducted across the country each fall (support the one coming up soon in your area).

Through these three programs, sportsmen have funneled more than a billion dollars into wildlife habitat restoration, research and management. Coupled with funds from the sale of hunting and fishing licenses, these dollars constitute the lion's share of all money spent in behalf of wildlife conservation in this country.

All this may seem to stray a bit from the original theme of goose hunting in southeastern Montana. But without habitat, we would have no geese and, without hunters, we would have very little habitat. As Hinz points out, the cornerstone of the goose management program in southeastern Montana is the nesting habitat provided by a *free-flowing, undammed* Yellowstone River. We are fortunate in Montana to have citizens who recognize the importance of preserving rivers in their natural state. Consider Gov. Thomas L. Judge's remarks in July at the Jaycee's 16th annual Yellowstone River float: ". . . the Yellowstone is much more than just a resource, it is a heritage. Today we celebrate keeping that heritage in its free-flowing, substantially unaltered condition. The Yellowstone is truly a 'wet, wild, and dam free' river, and I believe that is a good state of affairs for Montana."

That is also a good state of affairs for the Canada goose, and for those who care about it. In his classic essay, "Goose Music," Aldo Leopold said it better than anyone has before or since: ". . . I have congenital hunting fever and three sons. As little tots, they spent their time playing with my decoys and scouring vacant lots with wooden guns. I hope to leave them good health, an education, and possibly even a competence. But what are they going to do with these things if there be no more deer in the hills, and no more quail in the coverts? No more snipe whistling in the meadow, no more piping of widgeons and chattering of teal as darkness covers the marshes; no more whistling of swift wings when the morning star pales in the east? And when the dawn-wind stirs through the ancient cottonwoods, and the gray light steals down from the hills over the old river sliding softly past its wide brown sandbars--what if there be no more goose music?"—*Dave Books*

(from "A Sand County Almanac with Other Essays on Conservation from Round River" by Aldo Leopold. Copyright ©1949, 1953, 1966; renewed 1977 by Oxford University Press, Inc. Reprinted by permission.)

The Timelessness of Thunder Danc

CREEPING THROUGH alder bushes onto the ledge, Brown Eagle braced himself against the giant cedar. His eyes beheld a cascading waterfall breaking over jagged layers of rock and churning between the vertical canyon walls. He stepped closer to the precipice, held his breath and watched as the boiling waters of the Kootenai River surged below.

Kootenai Falls, a place of wonder, torn by upheaval of the earth's crust and scoured by glacial floods. Kootenai Falls, a place of power, where Indians came to share its strength. Kootenai Falls, a symbol of life, the final stop in the upstream spawning migration of the white sturgeon.

The mountain slopes above the falls were now layered in green. The sun was sharing its longest days, the time when bighorn sheep bring their newborn lambs to forage near the canyon rimrocks, and goslings beat the water with their wings in their first attempts to fly. Brown Eagle had spent the night before at the mouth of the canyon where a small creek enters what is now called the sturgeon hole. His journey was one each Kootenai boy took as a prerequisite to manhood. He had traveled alone from the lower river near Kootenay Lake in Canada.

Brown Eagle was a member of the Kootenai Indian tribe (Kootenay in Canada), which has occupied the Kootenai Valley for more than 5,000 years. The Kootenai Indians preceded both the Blackfeet and Flatheads to what is now western Montana. Occupying the long and complex valley of the Kootenai River, they were peaceful people with their own distinct language. The upper Kootenai Indians occupied the upper river area in the Rocky Mountain trench and Rocky Mountains while the lower Kootenai Indians occupied the Purcell trench and the Purcell Mountains downstream in the area around Kootenay Lake.

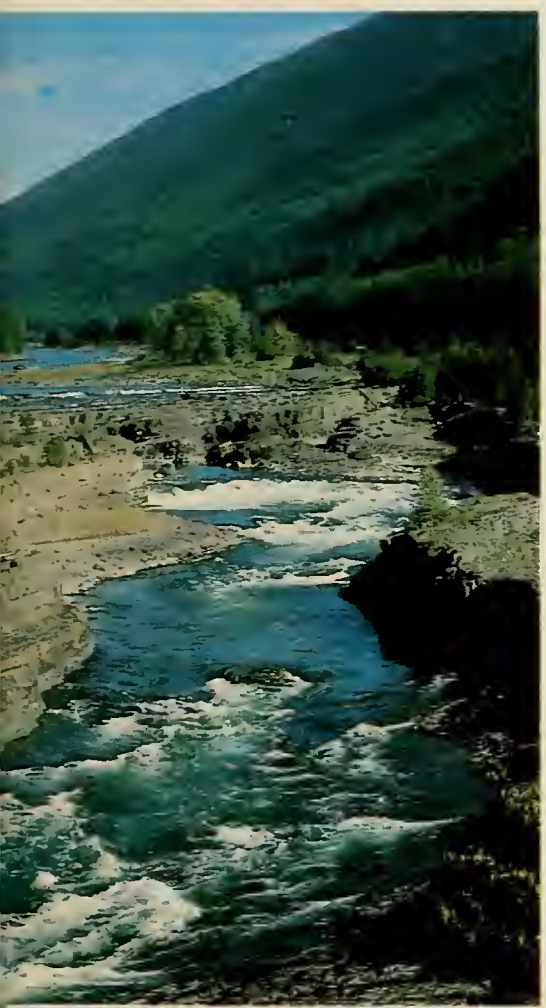
The culture of the upper Kootenai Indians was somewhat similar to that of the Plains Indians. They were nomadic hunters who moved seasonally with the animal herds, depending on fish as a secondary food source. Deer, elk, sheep and bison provided food, clothing and hides for tipis. They tanned hides and crafted bows and arrows.

The subsistence of the lower Kootenai Indians more closely resembled that of the Plateau Indians--fishing provided a stable food source, although sea-run Pacific salmon were not available in the Kootenai. They fished for trout, white sturgeon and other fish; hunted ducks, grouse and big game, and constructed "sturgeon-nosed" canoes for use on the river. They too were nomadic, moving with the seasons to fish, hunt and gather roots and berries.

Although the Kootenais comprised many small bands with diverse cultures, they were considered a single people, according to archaeologist Wayne Choquette. Their collective culture, which was based on communal sharing, advanced at a moderate rate until the advent of the horse, the gun and all that followed. Before the arrival of the horse, status

The Kootenai Falls area was used as a ceremonial site by the Kootenai Indians for thousands of years (top DFWP photo: Pat Graham). Bighorn sheep occupy the mountain range north of the river; ewes bring their lambs to the benches along the river in late spring (upper right photo: Harry Engels). Trout fishing is excellent in the Kootenai River, but wild rainbow populations would decline in the stretch of river above Kootenai Falls if a dam were constructed (right DFWP photo: Otis Robbins).

ng by Pat Graham



was achieved not by a person's possessions, but by his skill in providing for the needs of the band.

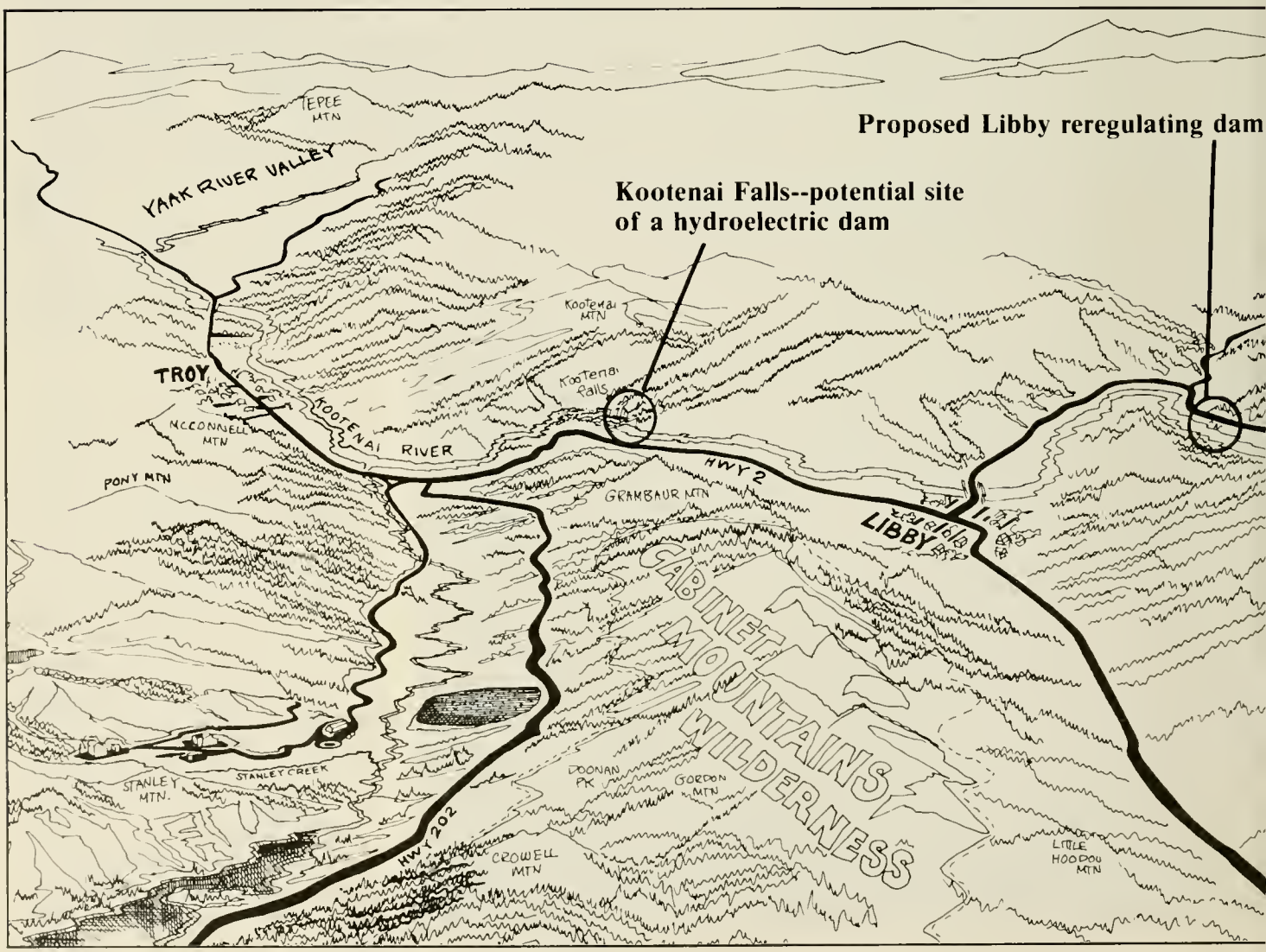
Kootenai Falls was a focal point in the Kootenai culture, occupying a place in the transition zone between the upper and lower groups of Kootenais. Archaeological evidence indicates the falls area was used as a ceremonial site by Indians for thousands of years. Artifacts found there include carved bones, bone beads and necklaces and scrapers, many painted with red ochre, signifying they were spiritual or sacred objects. To protect and preserve these archaeological sites, several have been nominated to the National Register of Historic Places.

Kootenai Falls was also a major barrier to river travel, and a portage trail can still be seen along the steep talus slope on the north side of the river. Indian campsites have been

located along the trail both upstream and downstream from the falls. The trail was noted by David Thompson, an early explorer, during his journey along the Kootenai River in 1809. It is possible that some Indians summering in areas upstream from Kootenai Falls would migrate downstream to spend winter in the milder climate of the lower river. Even today, the winter climate is often milder in Troy, a few miles below Kootenai Falls, than in Libby, a few miles above the falls.

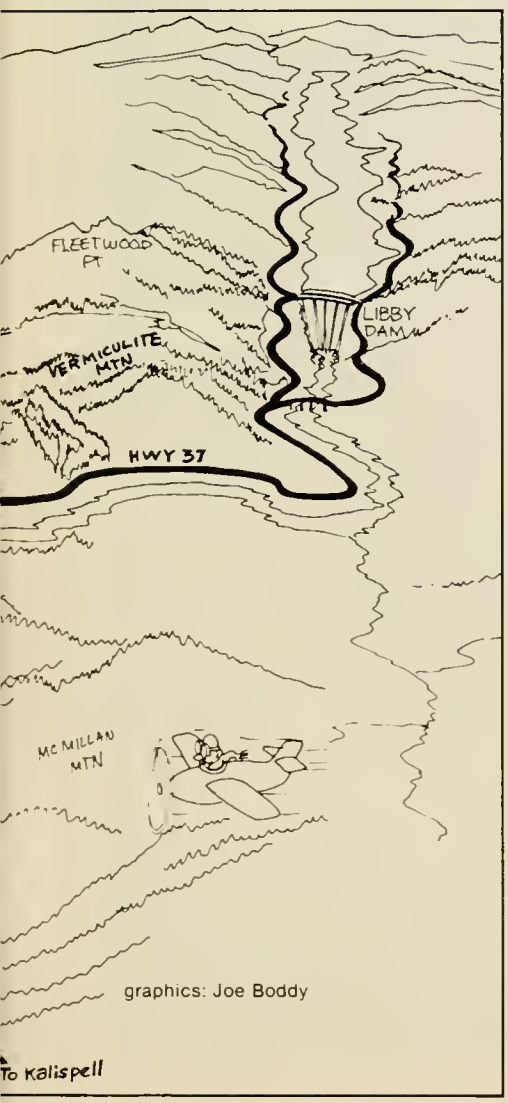
Based on annual discharge, the Kootenai is one of the largest rivers in Montana--larger than the Yellowstone or the Flathead. Prior to construction of Libby Dam, natural flows were greatest in May and June and lowest during winter, although winter chinooks sometimes resulted in flooding. A maximum flow of 121,000 cubic feet per second (cfs) was recorded near Libby in 1916 and a minimum flow of 1,000 cfs was recorded there in 1954. To control occasional downstream flooding and provide electrical peaking power, in 1972 Libby Dam was constructed 29 miles upstream from Kootenai Falls. The dam backed up water 50 miles in Montana and well into Canada, creating Lake Koocanusa. Since the dam was built, low flows occur during April and May when the reservoir is filling, and high flows generally occur during fall and winter, just the opposite of the normal seasonal fluctuations. By ensuring adequate flows for power during all seasons, reducing the potential for damage by high spring flows and controlling the normal seasonal fluctuations, Libby Dam increased the feasibility of a "run of the river" dam at Kootenai Falls.

Such a hydroelectric dam at Kootenai Falls has been proposed by Northern Lights, Inc. and several other rural electrical cooperatives. The 30-foot dam would consist of a concrete structure 18 feet high, which would support a 12-foot-high hydraulically operated gate to maintain a relatively constant pool level. An intake on the south shore would be covered by protective grates. Water would fall approximately 100 feet down to a tunnel that would carry it to four generators located in an underground powerhouse. The generators could handle 24,000 cfs of water, the entire peak flow from Libby Dam. At peak discharge, 97% of the river flow would be diverted around Kootenai Falls. Water would then pass into a return tunnel and enter the river about one mile downstream from the dam. The mouth of the return tunnel would be large enough to lower the velocity of



the returning water. The tunnel would be compressed vertically to keep it below water level and out of view. Maximum peak power production would be 144 kilowatts (kw), compared with 420 kw for Libby Dam under present conditions (840 kw with the additional generators currently being installed).

The dam would raise the water level for more than three miles upstream. It is called a "run of the river" project because its small storage capacity would allow water to pass through much more rapidly than in a large reservoir. It would provide an unusual environment, with currents too slow for a cold-water trout stream and too fast for a lake. Most insects that live in the riffles and provide food for river trout would not survive as the water was slowed and silt deposited on the gravel. Nor would plankton that live in lakes and



provide food for some lake-dwelling trout and many forage fish be sustained because even the slow current would sweep them down river.

The 2.5-mile river section upstream (Kootenai Falls to China Rapids) supports the largest population of wild rainbow trout sampled to date in the Kootenai River. We estimate there are 228 rainbow trout over nine inches long per 1,000 feet of stream, and have captured trout as large as 12 pounds. Rainbow trout are probably more abundant in this section because of the diversity of habitat provided by an interspersion of pools, riffles and large boulders. Fish displaced from upstream areas may concentrate in this area, because Kootenai Falls inhibits their downstream movement. Although insect drift from upstream would support some trout, naturally reproduced rainbow trout would decline in numbers in this area if the dam were constructed. Spawning would not be significantly affected, because the majority of spawning occurs in the tributary streams rather than in the river.

Mountain whitefish are also abundant in this section, far outnumbering the trout. Whitefish, although presently underutilized, would probably maintain fairly high populations initially if the dam were constructed. Numbers would decline as food became more scarce in the pool area, but they would not decline as significantly as rainbow trout populations.

Many anglers fish this section of river upstream from Kootenai Falls because of easy access and high success. Some prefer to fish with bait, such as red salmon eggs or night crawlers, but fly-fishermen also do well, particularly during hatches of small mayflies in spring and caddis flies in late summer. Angling is often restricted by high, fluctuating flows from Libby Dam during weekdays and at times on weekends. This section of river is known for producing trophy fish. Average size of fish caught in this stretch is 12-13 inches, and fish over 16 inches are not uncommon.

Passage of fish upstream and over Kootenai Falls is limited, if it occurs at all. However, downstream movement of fish could be severely impaired if the dam were constructed. The semi-circular intake structure would have a 380-foot perimeter. This would be large enough to keep water velocities near the intake below three cfs on the average, allowing some fish to escape. However, if the proposed minimum flow of 750 cfs over the falls is accepted, 90% of the river's flow could be diverted 60% of the time. Other studies have shown that the larger the volume of water diverted, the larger the number of fish entrapped in the intake. Fish sucked through the intake screens would probably suffer severe physical damage from rapid pressure changes and abrasion in the tunnels.

Building the dam and its associated tunnels would require excavation of approximately 400,000 cubic yards of material. A portion of the material would be used for raising the railroad bed along the south bank roughly 15 feet, and possibly contouring the railroad grade to better approximate the contours of the river. Although this would reduce the problems associated with fishing from a steep railroad grade, it is unlikely that much sport fish habitat would be created because of the slow current. The area could be managed for waterfowl by creating weed beds for feeding and some islands for nesting.

Most of the riparian (streamside) vegetation would be lost and could not be replaced, particularly on the south shore where water would be backed up to the railroad grade. This vegetation, which forms the transition between the aquatic and terrestrial ecosystems, provides important habitat for many birds and mammals. According to department wildlife biologist Gayle Joslin, more than three-fourths of the birds in the affected section of river utilize the riparian vegetation zone to some extent.

Other wildlife of special interest that might be affected by the dam include bighorn sheep, harlequin ducks, bald eagles and white sturgeon. Bighorn sheep occupy the mountain range north of the river along the entire length of the project. Ewes come down to feed along the river as the benches green up in early spring, and return to these areas with their lambs in late spring.

Several pairs of harlequin ducks have been observed in the rough water just above the falls in the

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The Northern Water Shrew:
Water Walker

by Ken Walcheck
illustration by Takehiro Taira

A tiny mountain stream meandering across a broad meadow seemed like a good spot to rest. As I removed my rucksack from my tired shoulders, I saw a small, blackish-grey rodent sprint across the surface of the water.

At first I couldn't believe my eyes—a mammal which could actually walk on water? When I got home, I dug out my mammal field guide and found I had seen a northern water shrew, *Sorex palustris*. But I had to search further to find out how this little creature could walk on water. A fringe of stiff, fine hairs on its hind feet enhances its swimming and water-treading abilities and also encases small pockets of air which act as miniature pontoons and enable the shrew to run short distances on calm surfaces.

The shrew belongs to the order Insectivora which is nearly worldwide in distribution and represents some of the world's most primitive mammals. These survivors have haunted the landscape for millions of years and have outlasted animal kingdoms that once flourished, then fell. Altered little by time, these living relicts continue to prosper.

A small group of insectivores from the Eastern Hemisphere tropics, the tree shrews, is especially interesting. Although trees were probably the ancestral home of this group of mammals, most insectivores turned to above ground or even underground modes of life. Only the tree shrew continued to live in trees. Apart from retaining this primitive habitat, the tree shrew is important because it appears to represent the stock from which primates (an order of mammals comprising man, apes and monkeys) emerged.

Today, 27 varieties of shrews inhabit North America, from arctic tundra to arid sagebrush plains and from lowland bogs to timber line. Shrews in Montana include the masked, vagrant, Merriam, dwarf, northern water, preble, pygmy and possibly the arctic shrew.

While the shrew resembles the mouse in many ways, its jaws are elongated or pointed and it has five toes on each foot. (Most mice have only four toes on their front feet.)

The shrew would be amazing for its size alone. The pygmy shrew, *Microsorex hoyi*, weighs only a fraction of an ounce and is probably the smallest living mammal. But size is only one item which makes the shrew a unique little animal.

Another intriguing characteristic is its ravenous appetite. Enormous appetites packed into tiny bodies make life one continuous meal. Summer or winter, day or night, a shrew's metabolic "engine" is always warm and humming. Because its small size results in a relatively high loss of heat—energy—through the skin, a typical shrew will eat its own weight in food daily. Some species will even consume their own weight several times a day. Deprived of food for 24 hours, a shrew will literally starve to death. To adequately fuel its ever-hungry "engine," it constantly probes for insects, worms, spiders, slugs, snails, centipedes, vegetable matter and small animals such as mice.

Put three shrews together and what might one expect? Naturalist C. Hart Merriam found out. "Almost immediately they commence fighting and in a few minutes one was slaughtered and eaten by the other two. . . ." Eight hours later, only one shrew remained and "its abdomen was much extended."

The secret of the shrew's success as a predator is a gland in its mouth which contains a potent nerve poison similar to that of venomous snakes. The poison flows with the shrew's saliva into the body of a bitten victim. A mouse bitten by a shrew will die in about three minutes. The poison from certain shrew species such as the shorttail *(Blarina brevicauda)* is strong enough to cause swelling in the bitten part and discomfort in humans.

Feuding or feeding, the shrew leads a fast-paced existence. When excited, its heart beats up to 1,200 times per minute and it may die of shock if picked up or handled. Because all of its physiological activities are accelerated, researchers are experimenting with shrews in the hope of unlocking the secrets regulating life processes.

Usually solitary and quarrelsome, shrews seem peaceful only when mating. The female produces two or three broods each year, totaling as many as 20 honeybee-sized young. Even if the shrew escapes larger predators, it may die of old age within a year and a half, so such a high reproductive rate ensures the species.

Like many other mouselike creatures, the shrew is a burrower. It is not very efficient, however, since its forelegs were not designed for digging through soil. So a shrew usually burrows in the softer organic litter on top of the ground or uses tunnels of other small animals.

Like many other wild things, the shrew serves as an index of environmental quality. In some agricultural areas, shrew numbers have decreased because of excessive pesticide use.

What purpose does this small creature have in nature's overall scheme? Aldo Leopold, founder of the profession of wildlife management in this country, probably had the best answer. In "A Sand County Almanac" he wrote, "The last word in ignorance is the man who says of an animal or plant: 'What good is it? . . .' If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering." ■

TAKEHIRO 1999

Anti-Hunting's Day of Infamy: The Attack on Pittman-Robertson

by John P.Weigand and Thomas W. Mussehl
illustrations by Kelly Vollrath

ON A SUNDAY MORNING some 37 years ago, radios blared the shocking news of the attack on Pearl Harbor. Until this attack--despite many warnings--Americans had remained unresponsive to the threat of impending war. On March 13, 1978, anti-hunting forces launched an all-out attack on hunting, hunters and wildlife management in the United States. Like Americans before Pearl Harbor--and again, despite many warnings--wildlife agencies and sportsmen had not taken seriously the war against hunting and wildlife management.

The attack consisted of a lawsuit filed in federal court in Washington, D.C. to bar the U.S. Fish and Wildlife Service (FWS) from spending $63 million in wildlife restoration funds. These funds, referred to as Pittman-Robertson (P-R) funds, are derived from an 11% excise tax on guns, ammunition, bows and arrows. These are dollars paid by sportsmen--through the purchase of hunting equipment--to aid in conducting wildlife research, acquiring key habitat, surveying wildlife populations and their habitats and carrying out other projects of direct benefit to wildlife species. In the 41 years that this system has been in effect, more than $882 million has been distributed to state wildlife agencies for the purposes described above.

How important is this money to the welfare of wildlife in Montana? In the words of Montana Department of Fish, Wildlife and Parks Director Robert F. Wambach, "We have no source of funding in Montana to replace Pittman-Robertson dollars; these dollars make up almost half of our wildlife management budget. Loss of P-R funding would leave us unable to maintain our wildlife management areas in the western half of Montana."

The lawsuit in question was filed by the Committee for Humane Legislation and Friends of Animals, two eastern-based organizations which oppose hunting and trapping (and presumably fishing). The suit charged that all of the 614 state wildlife restoration projects to be funded through the Pittman-Robertson program in 1979 were major federal actions and, as such, required environmental impact statements (EISs) to bring them into compliance with the National Environmental Policy Act (NEPA). The number of challenged projects was later reduced to 182 (five in Montana). In the past year, an environmental assessment report (EAR) for each project has been provided to the plaintiffs (an EAR is the initial document required under NEPA and is the basis for deciding whether a full EIS is needed).

On June 25, 1979, five days before Montana's funding deadline, District Court Judge Charles R. Richey dismissed the lawsuit, after the litigants filed a settlement agreement with the court. The anti-hunting groups agreed not to challenge the P-R projects at least until July 1980, and the FWS agreed to summarize the 182 state wildlife projects in notices placed in local newspapers and in the Federal Register.

While dismissal of this lawsuit has been hailed as a victory for sportsmen and conservationists, it is only temporary and we can expect future challenges to the Pittman-Robertson program. Obviously, the anti-hunting forces

neither know nor care much about the true uses and accomplishments of the P-R program, as evidenced by their willingness to deny state wildlife agencies $63 million in wildlife restoration funds in 1979. Their intention is to tie up the program in paper work, eventually forcing each state to write an environmental analysis on every game species every year. They make no secret of the fact their ultimate goal is to call a complete halt to sport hunting in the United States. Sadly, in their misguided attempts to stop sport hunting, anti-hunters are damaging a program that has greatly benefited wildlife over the past four decades.

It is important that all conservationists be aware of the threat posed to the P-R program. Should anti-hunters succeed in their efforts, wildlife management in Montana will be severely curtailed. It is crucial that sportsmen and others concerned for wildlife's future understand the following facts:

Q. What is Pittman-Robertson?

A. It is synonymous with the Federal Aid in Wildlife Restoration Act of 1937. It resulted from pressure brought by sportsmen concerned about the nation's dwindling wildlife populations. Of special concern were waterfowl and other marshland animals, which had been especially hard hit by the drought of the 1930s. Since the proposal was introduced in Congress by Sen. Key Pittman (Nevada) and Rep. Willis Robertson (West Virginia), it was called the Pittman-Robertson Act, or simply P-R.

Q. Why was this particular law needed? Didn't the states already have their own wildlife programs?

A. States at that time were regulating and restricting hunting seasons, raising and releasing animals from game farms, paying bounties on predators and establishing refuges for resident wildlife, but these activities had failed to bring wildlife populations to desired levels. State and local politics too often interfered with funding of wildlife programs. Frustrated in their efforts, sportsmen and other concerned citizens interested in wildlife conservation recognized that new technology and a stable funding source were needed to effectively manage and perpetuate wildlife.

Q. Legislation does not usually meet its objectives without funding--was there a funding provision in P-R?

A. Yes. The act earmarked money from an existing 10% excise tax on sporting firearms, shells and cartridges for wildlife restoration by the states. The tax rate was increased to 11% in 1941, a level maintained through the present. The act was amended in 1970 to similarly tax pistols and revolvers and, in 1972, to tax bows and arrows. One-half of the new funds from these amendments is earmarked for hunter education/safety programs and construction, operation and maintenance of public shooting ranges. The tax is collected at the manufacturer level and is part of the price the sportsman pays for each product.

Q. How does P-R money get back to Montana?

A. The Secretary of the Interior was authorized to enter into agreements with individual states to allocate the money. "Assent acts" had to be passed by each state legislature and a state agency had to be the designated recipient. Montana received its first approved project and the first P-R funds in 1941; the designated agency was the Montana Department of Fish and Game (now the Montana Department of Fish, Wildlife and Parks). For the past 38 years, Montana has received its allocation, usually at a ratio of three P-R dollars for each hunting-license dollar.

Q. How much P-R money does Montana receive?

A. Since 1941, Montana has received more than $27 million in P-R funding. The 1978-79 allotment was slightly under $2.2 million.

Q. Is there a limit to the amount of P-R money Montana can receive?

A. Yes. Since 1946, the money has been divided among states by the following formula: (1) One-half is based on the number of hunting licenses sold; (2) one-half is based on the size of the state. *Free licenses* cannot be counted toward the allotment portion. No state may receive less than .5% and no more than 5% of the P-R total in any given year. Montana, because of its large size, is among the top 10 states in amount of P-R money received.

Q. Does Montana automatically receive its P-R allotment each year?

A. No. During the first years of P-R, Congress appropriated funds to the states each year. In 1947, the act was amended to provide for automatic annual appropriations (contingent on the Secretary of the Interior's approval). Detailed work plans for each project must be approved by the secretary every five years. A briefer project description must be filed with the secretary before the beginning of each state's fiscal year and a progress report must be submitted at the end of each fiscal year. Approval

of each of these documents is necessary before P-R money can be allocated to Montana.

Q. What happens if Montana fails to spend its annual P-R allocation?

A. Each state has two years in which to spend its allocation. Any unused money remaining after that time reverts to the federal government under provisions of the Migratory Bird Conservation Act. It may then be spent for research, refuges or law enforcement by the FWS. No other state may claim the unused money. Nationwide, only 3%-4% remains unused each year. Montana has alway used its full allotment.

Q. Can P-R money be spent for any wildlife-related activities?

A. No. It can only be used to inventory wildlife populations and their habitats, conduct wildlife research, purchase and develop wildlife habitat, trap and transplant wildlife, conduct hunter education/safety programs and

construct and maintain shooting ranges.

Q. What kind of wildlife inventories are made in Montana?

A. Inventories include annual surveys of breeding populations, reproduction, game harvests, sex ratios, mortalities, range or habitat uses and habitat conditions and trends. They are conducted from trucks, horseback, airplanes, snowmobiles or on foot, depending on the species, terrain and weather conditions. Some information is collected from landowners and hunters by personal contact and postal questionnaires. Information from the various inventories forms the basis for annual hunting season recommendations.

Q. Has P-R money sponsored wildlife research in Montana?

A. Since the mid-1940s, studies have been made of at least some phase of the biology and ecology of most game species in Montana. The effects of hunting regulations, game farm pheasant releases and bounties on wildlife populations have been evaluated. In addition, the effects of pesticides, farming, livestock grazing, logging and other habitat alterations on various wildlife populations have been investigated. Wildlife disease work has been done in cooperation with Montana's Veterinary Research Laboratory.

Q. Are there any wildlife-related activities that cannot be reimbursed by P-R?

A. Yes. They include game farms, law enforcement and public relations.

Q. Have Montanans benefited from P-R?

A. Absolutely, if they enjoy wildlife. Through research, management and habitat improvement, game populations have been increased significantly since the 1930s. Land purchases have assured preservation of some critical big game winter ranges and marshland habitats. DDT and toxic mercury compounds are no longer used on our forests and fields. Species such as antelope, deer, elk, mountain goat and bighorn sheep have been reintroduced into areas they formerly inhabited and transplanted to suitable new sites as well. Wild turkeys, which are not native to Montana, have been successfully established in several parts of the state.

While P-R funding has obviously benefited game species, the advantages to *all* wildlife should be apparent. Habitats managed for game species are managed simultaneously for nongame wildlife. Surveys show that about half of the recreational use of such areas involves activities other than hunting. While hunting occurs only about three months of the year, photography, hiking, bird watching, etc. may be enjoyed year-round.

It is also important to remember that P-R funds, as well as license dollars, have a direct effect on local economies. Department employees involved in wildlife surveys and research projects throughout the state require food, housing, vehicles and other goods and services. In addition, sport hunting and other wildlife-related pursuits create a demand for a variety of goods and services, boosting the economies of many locales.

* * * * *

Reactions to the P-R lawsuit are best described in the words of Jack Grieb, director of the Colorado Division of Wildlife: "It is especially unfortunate that legal actions such as the one currently leveled against the Pittman-Robertson program not only threaten future hunting and fishing but also wildlife conservation in general. It is sad that the fervor of some groups drives them to actions which are actually counterproductive in terms of their own goals."

In summary, the Pittman-Robertson Act of 1937 resulted from the concern of sportsmen (specifically hunters) for the welfare of the nation's wildlife. It has weathered several attempts to erode its objectives and funding base. As Japan's fleet steamed away from Pearl Harbor, its leader voiced the fear that the attack may only have awakened a sleeping giant. Acting in unison, hunters, shooters, fishermen and all others genuinely concerned about wildlife also constitute a giant. With the recent attack on Pittman-Robertson, it behooves us to be awake—*wide awake.* ■

The Catchall

Southeastern Montana Success Story

Closure of private land to hunting has been a major factor in restricting hunter recreation in Montana, especially in eastern Montana. Although the situation was evident to many people, it was really the Montana Stockgrowers Association which sparked a solution to some of the existing problems. Rosebud Creek rancher Don Bailey, chairman of the association's Landowner/Recreationist Committee, played a major role in initiating a resolution which paved the way for creation of the Landowner Relations/Sportsmen Access Advisory Council.

The 13-member council, comprised of sportsmen, ranchers and legislators, was appointed by Robert F. Wambach, director of the Department of Fish, Wildlife and Parks, and approved by Gov. Thomas L. Judge. One of the council's first steps was to explore ways to improve relations between sportsmen and landowners and to increase hunter access to both privately controlled land and public land where access was blocked due to surrounding private holdings. The council found that one of the common complaints of landowners was the shortage of department enforcement effort, especially during peak periods of big game hunting.

The council recommended to the Fish and Game Commission expansion of the department's *ex officio* warden program to include all field personnel. (This program gives department personnel rights and powers of state game wardens.) The commission approved the suggestion and directed its implementation in time for the 1978 hunting season.

Although the department's *ex officio* program was started in 1973, it was used mainly by managers of game ranges and state parks for patrolling department-owned land. This concept worked well for its intended purpose, but it did little to increase wildlife law enforcement on private land.

Warden *ex officio* training schools were conducted in August 1978 and the 98 participants included fisheries and wildlife biologists, fish hatchery personnel, information officers, parks personnel and some Helena staff. Training sessions were taught by field wardens, warden captains, attorneys and federal wildlife agents. The five-day schools were well-received by participants and generated more interest than anticipated. Addition of these *ex officio* wardens doubled the number of department personnel with enforcement authority.

Region 7 (Miles City) comprises 10 counties of southeastern Montana--about 31,000 square miles--of which approximately 80% is privately owned or privately controlled. In this region, 67% of the mule deer harvest, 85% of the whitetail harvest and over 80% of the antelope harvest comes from private land.

The *ex officio* warden program in Region 7 was coordinated between field biologists and wardens before hunting season. We believed the program could best be implemented if biologists initially spent some field time with the wardens so they could better understand field enforcement procedures. This was easy, because we had at least one game warden to work with each *ex officio* warden. Field training took place during the upland game bird and archery big game seasons. Actually, it turned out to be a reciprocal program because biologists taught wardens how to collect certain biological information.

Our focus was those lands which had been closed or were in danger of closure. The nine *ex officio* wardens in the region spent 150 man-days patrolling about 1,200 square miles of private land open to big game hunting with permission. Some closed land was subsequently opened because of the program. Patrolling efforts centered on specific days when hunter use was highest. During our patrols, we checked over 400 big game hunters, numerous bird hunters and contacted over 60 landowners. Sixteen fish and game violations were successfully processed through court by the *ex officio* wardens and 10 courtesy citations were written. Landowners involved indicated satisfaction with the program.

Not only did this program increase the amount of private land available to sportsmen, but other unexpected benefits materialized. Biologists and wardens gained a greater appreciation of each other's jobs and both groups now better understand the department's activities. For example, coordinated efforts included aging of more than 600 big game animals, handling game damage complaints and assisting with other chores. Because of this program, we have enjoyed improved working relationships with our fellow employees, which benefits all sportsmen in Montana.

Although the *ex officio* program was successful, it does not provide all of the answers to existing problems. Sportsmen are really subject to two sets of laws--the written laws that govern seasons, bag limits and hunting methods, and a code of honor that each hunter imposes on himself. Unfortunately, someone can be licensed and law-abiding and still never be a true sportsman. Without dedication to the unwritten laws--the ethics--hunting as a sport will surely suffer.—*Tom Bivins, Region 7 (Miles City) warden; Jon Swenson, Region 7 wildlife biologist*

State Trapshooting, Skeet Winners Decided

The 85th annual Montana State Trapshooting Tournament was conducted at the Missoula Trap and Skeet Club July 11-15. High overall scorer was Dan Lineback, Billings, with 383 of a possible 400 targets. Mel Batchelor of Carter claimed the 16-yard singles title with 198 of 200. The Montana handicap championship went to Lineback, with 97 of 100, and the state doubles title was won by Fred Wright of Hamilton with a 94. Kalispell shooters Jeff Kiichli and Randy Birky claimed the veteran and subjunior 16-yard championships, respectively, and Glen Boles of Helena captured the junior 16-yard title. The women's 16-yard was won by Barbara Renfro, Dillon, with 194 of 200.

Kevin Gordon, Bozeman, repeated as

recycled paper

winner of the Montana Skeet Shooting Championship, hosted by the Sun River Skeet Club of Great Falls July 13-15. Gordon broke 386 of a possible 400 targets to best runner-up Paul Halttunen of Missoula by one bird. Donna Tabish, Missoula, and John Abbey, Great Falls, repeated as women's and senior champions, respectively. Subsenior champion was Ed Borer, Great Falls, and junior champion was John Nickman, Missoula. *—Dave Books*

Where Do We Go From Here?

The March/April 1979 issue of *Montana Outdoors* contained an article, "Toward a Better Understanding," which discussed the creation and recommendations of the Landowner Relations/Sportsmen Access Advisory Council. One council proposal, in the form of House Bill 575, recommended establishment of a property damage reimbursement program designed to pay private landowners for damage caused by sportsmen. Such damages are one of the most common complaints of landowners, and a primary reason for locked gates and "no trespassing" signs.

HB575 was passed by the Montana House of Representatives by a large margin, but encountered problems when it reached the Senate. Following substantial and weakening amendment of the bill by the Senate Fish and Game Committee, it was killed during second reading on the Senate floor.

Other recommendations of the council have been implemented by the Department of Fish, Wildlife and Parks and by the Fish and Game Commission, and some await action. But the failure of HB575 was a blow to council members because the property damage problem is so often mentioned by landowners. The bill was a "good faith," sincere effort by the council, department and commission to resolve a problem. Members spent nearly one year designing the program, and failure of the legislative request "did a tremendous disservice to those landowners who would like to cooperate with city people," according to one council member.

Many wonder what happens next. The two-year term of the council ends soon. Does the council fold up its tent and steal away into the night, never to be heard from again? Or, does it continue to work on the difficult problem of landowner/sportsman relations and forge ahead with the design of new programs and concepts which will encourage better relations?

The answers to these questions came at an April 3 meeting of the council in Helena. During a "post-mortem" discussion about the fate of HB575, it was obvious that council members were both irritated and dejected at the Senate's treatment of the bill. After carefully dissecting what actually happened, however, the council firmly resolved to continue its important work, but in a slightly different direction.

Members are now considering development of a program which will directly benefit Montana's wildlife and private landowners. Two-thirds of the state is private land. The council believes that some type of financial incentive for the landowner who preserves and/or develops wildlife habitat would definitely benefit not only the landowner, but wildlife and future generations of wildlife enthusiasts as well.

For years, many landowners have tolerated such things as game damage, heavy hunting pressure and associated problems for several reasons. First, Montana landowners enjoy wildlife. They like to see the deer which venture out to feed in the meadow at dusk, the brood of young pheasants scratching in the roadway and the family of beaver busily at work in the stream behind the barn. Such landowners possess a deep appreciation of the land and the life it supports, and they want others to share in this appreciation. Second, many landowners feel an obligation to their city brother who depends on them for not only food on the table, but a place to recreate and get away from the pressures of an urban environment. Landowners with this attitude feel fortunate to live on the land, but recognize they are only part-time tenants, and the land will eventually pass on to someone else. If something could be done to reward such landowners, would it not help ensure the future for wildlife, its all-important habitat and enjoyment of both by people whether they hunt, fish or merely look and listen?

Council members believe such an approach has merit. Through the next few months, they plan to devote their efforts to designing such a program. But they urgently solicit your ideas and suggestions. A successful program will depend on your help and understanding. If you have comments, contact the council member in your area, or drop us a line. In the interest of a bright tomorrow for all of us--the landowner, Montana's wildlife and people with an outdoors appetite--we hope you will give us a hand.--*Steve Bayless, special projects coordinator*

Wildlife Shorts

White elephants really do exist. Albinism occurs in many animals; now and then—although very rarely—it occurs in elephants. An albino elephant isn't actually white, but generally a pale yellow-gray color with pinkish spots.

* * * * *

Insect blood is colorless or faintly yellow. When you squash an insect and see what appears to be red blood, it is really the blood from some other animal on which the insect has fed.

* * * * *

Two mammal species lay eggs: platypuses and spiny anteaters. Both are primitive Australian animals.

* * * * *

A centipede may have as many as 30 legs on each side, but never a total of 100 legs.—*Vince Yannone, assistant chief, Conservation Education Bureau*

A Day of Importance For Montana Anglers

Does Aug. 9, 1950 have any special significance for Montana anglers? Few people realize it, but that date marked enactment of a federal law that has had far-reaching benefits for anglers, not only in Montana, but throughout the nation. Entitled the Federal Aid in Sport Fish Restoration Act of 1950, it is more commonly known as the Dingell-Johnson Act or D-J program. It is the fish restoration counterpart to the Federal Aid in Wildlife Restoration Act of 1937 (Pittman-Robertson Act or P-R program).

The bill was introduced in the 81st Congress by Sen. Edwin Johnson of Colorado and Rep. John Dingell Sr. of Michigan. It readily passed both the House and Senate and was signed into law on Aug. 9, 1950. The signing was actually the culmination of a long struggle that began in May 1939, when Rep. Frank H. Buck of California introduced legislation calling for a 10% excise tax on fishing tackle to provide financial aid to state fisheries management programs. Rep. Buck's early efforts were thwarted for 11 years by adverse committee reports, World War II, objections from some commercial groups and presidential vetoes, until the oft-revised bill became law in 1950.

The money derived from the tax is divided among state fish and game departments for fish management. The amount going to each state is determined by a formula that considers land area and total fishing license sales. No state receives more than 5% nor less than 1% of the annual allotment. The state agency must provide $1 of its own funds to match every $3 of D-J money. Safeguards in the law ensure not only that the money is used for fisheries management, but also that the traditional funds from license sales are not diverted to other

uses. If a state uses license money for purposes other than fish and wildlife management, its program is ineligible for D-J funding.

The Federal Aid in Sport Fish Restoration Act has had a major impact on fisheries programs throughout the nation. Between 1950 and 1975, approximately $183 million was apportioned to the states. In 1975, D-J projects accounted for about one-third of the combined fish management budgets of the 50 states.

Montana's participation in the Dingell-Johnson program began in 1951, when the Montana Legislature passed assenting legislation. Project proposals were submitted, and funds became available later that year. Montana has received over $5 million from the fund since 1951. The initial allocation of approximately $30,000 may seem small by today's standards, but it represented a substantial supplement to the department's newly formed fisheries management section. Montana's share of the fund, which has increased substantially over the years, amounted to $466,000 in 1977-78 (about 20% of the fisheries management budget).

Many advancements have been made possible by the D-J program in Montana. Included are acquisition and management of public fishing areas, chemical control of rough fish populations, survey and inventory of the state's waters, creel census surveys, life history studies and research projects designed to increase our knowledge of the fisheries resource. Habitat preservation has been a major objective in Montana's D-J program, and the information obtained in numerous studies has contributed to enactment of important environmental laws.

This program has enhanced fishing opportunities for Montana anglers and it will continue to benefit users who provide the funds through license fees and the tax on fishing tackle.

Because inflation has taken its toll on fisheries budgets in recent years and future funding appears inadequate, proposals have been made to amend the law to include certain items currently not taxed. A proposal sponsored by the American Fisheries Society and the Bass Anglers Sportsman Society would add a 3% tax to small boats, boat trailers and outboard motors. These items are not used exclusively for fishing, but studies indicate such boats and motors are used 70% of the time for recreational fishing. This figure may be even higher in Montana, where seasons and weather put some constraints on recreational boating. As might be expected, opposition has surfaced to even a small excise tax on these items, but the proposal could provide an important supplement to fisheries budgets at a time when inflation is rapidly eroding available funds.

In addition to inadequate funding for fisheries programs, another problem may be looming on the horizon for the nation's anglers. Two national organizations, Friends of Animals and the Committee for Humane Legislation, recently challenged the Pittman-Robertson program in court, threatening to impound $63 million in wildlife restoration funds (see the article on page 8). Although this suit was dismissed in June following a settlement agreement, future challenges will probably be made, since the underlying motive of these organizations is to end recreational hunting in the United States. It will probably only be a matter of time until they make a similar attack on the Dingell-Johnson program.

If this threat becomes reality, money and manpower will have to be diverted from action programs like acquiring fishing access and conducting fisheries surveys and research to defending the D-J program and the angler's right to utilize a renewable resource.—*John J. Gaffney, fish biologist supervisor, Research Bureau*

We'll Remember Them . . .

Leland Schoonover

Leland Schoonover, known to most Montana conservationists as "Schoony," has died. During his lifetime, Schoony pursued the cause of conserving the natural values of Montana as an educator, legislator and citizen activist.

The passing of a man of Leland Schoonover's stature only emphasizes that the cause of conservation is an endless struggle that links all of us to both the past and to the future.

Throughout his lifetime in the Flathead, Schoony forged many links in the chain of events responsible for the wild land values still enjoyed in this state. He confronted and prevailed over many proposals to alter, exploit and deplete Montana's natural resources, with each victory adding a link to the chain of protection around Montana. In conservation struggles too numerous to reiterate, Schoony usually could be found at the forge either hammering out those links or fanning the fire. Filling the gap left with his passing will indeed be difficult.

Sixteen years ago, writing in the "President's Column" of the *Montana Wildlife Federation News,* Schoony wrote, "We oftentimes think of the purpose of an organization such as this as being responsible for the welfare of our wildlife. We have today broadened the scope of our thinking to where we are interested in all phases of resource management and development. Our creed is that we are merely serving as stewards for the future generations and when the time comes for an accounting, our record will show a balance in our favor resulting from wise management and courageous leadership."

There is no doubt Leland Schoonover clearly left the balance "in our favor."—*Jim Posewitz, administrator, Ecological Services Division*

Delbert Bloom
Kenneth D. Lorang

Two Department of Fish, Wildlife and Parks employees, Delbert Bloom and Kenneth D. Lorang, were killed in early June when their light plane went down during a low-altitude survey of nesting geese. The plane apparently flipped over onto its back after coming into contact with some timber; one wing was severed from the aircraft and the other partially separated from it.

Mr. Bloom was a warden for the Great Falls region in the department's Law Enforcement Division and pilot of the aircraft. He had worked for the department for three years. An avid hunter, fisherman and skier, he was also a member of the National Rifle Association, the Army Reserve and had served with the Green Beret for four years. He received a B.S. in entomology from the University of Washington and an M.S. in biological sciences from Montana State University. He is survived by his parents, Claude and Lottie Bloom of Lewistown.

Mr. Lorang was working for the department's Wildlife Division as a fish and wildlife biologist at Fairfield. He had been employed by the department for two months at the time of his death. A member of the Great Falls Jaycees, he and his family had recently moved to Choteau. He received his undergraduate degree in psychology and wildlife management from MSU and recently completed requirements for the M.S. in wildlife management. He had also done graduate work in zoology in Manitoba, Canada. He is survived by his wife and a daughter, Jenevieve, both of Choteau, and his parents, Mr. and Mrs. Ally Lorang, Great Falls.

The Timelessness of Thunder Dancing continued

spring. These ducks are especially vulnerable because of their narrow habitat requirements and intolerance of human activity. They depend on aquatic insects found in fast-flowing waters as a food source and, because they are faithful to their nest sites, are susceptible to fluctuations in water level. Harlequin ducks are uncommon in Montana, which makes observing them a special experience.

Bald eagles migrate through the area in fall and winter, and stop along the river to feed on the abundant fish, their principal food source. Ospreys nest along the river in spring, are seen around the falls and river area during summer and migrate south in fall. If fish numbers decrease as expected following dam construction, the potential impact of the project on these birds of prey could be a reduction in food, particularly for the osprey. There may be some positive effects for bald eagles because fish killed in the intake-generator system would provide a concentrated feeding source at the outlet.

Below the falls, a steep, narrow canyon winds for several miles. It is in this canyon that white sturgeon are thought to spawn. In July, divers from the Department of Fish, Wildlife and Parks entered the canyon at two sites and searched the 100-foot depths for white sturgeon. The presence of one large sturgeon was confirmed by two divers and other divers reported seeing two or three small sturgeon (12-18 inches long). We plan to make additional dives to confirm the sighting of the small sturgeon, which may be only 2 or 3 years old.

The largest fresh-water fish in the United States, the white sturgeon is thought to be decreasing in many areas. It is a long-lived fish: Males do not mature until 11-22 years old, and females do not mature until 26-34 years. Sturgeon captured in the canyon below Kootenai Falls during the past four years averaged 18 years in age and ranged from 36-48 inches long. Study of these fish has been difficult in the canyon, where water depth of pools ranges from 40 to over 100 feet. Extent of the impact of this project or the Libby Dam project on white sturgeon is unknown at this time.

One major point of contention in the dam proposal is the amount of water that would be allowed to flow over the falls if the dam were constructed. The electrical cooperatives presently recommend a flow of 750 cfs--a volume lower than the historic daily *minimum* flow in the Kootenai River and less than one-fourth of the minimum flow from Libby Dam of 4,000 cfs (the minimum flow recommended by the Montana Department of Fish, Wildlife and Parks and tentatively accepted by the Army Corps of Engineers). Although the cooperatives have offered to disperse this flow over the entire falls by installing a mosaic of concrete-filled bags and adjusting the gates on the dam, it is difficult to imagine the falls under these conditions.

Several alternatives for retaining the aesthetic attraction of the falls could be explored, such as increasing flows during daylight hours and reducing them at night, etc. In a cost/benefit analysis, the pleasure of viewing the falls must be weighed against kilowatts of power produced--a difficult task for even the most imaginative soul! One must visit the falls area and walk across the swinging foot bridge, climb along the rocky hillsides and view the power of the falls to fully comprehend the unique beauty of the canyon--then ask himself how much it is worth.

We have carved a free society from wild and rugged lands in the last 200 years. But in the process have we enslaved ourselves? Are we at the point where other living creatures or wild and free-flowing rivers have no value if they cannot be bought and sold? Have we created a civilization where wasting resources is more economical than conserving them? Is Kootenai Falls the problem, or is it the solution?

It is neither. Few people truly want to revert to the past and use kerosene lamps, trudge to the outhouse and carry water. But that is not the issue. We are told that we will soon be freezing in the dark, but at the same time we are encouraged to continue producing more energy to maintain a stable economy. Too often the future is merely used as an excuse to carelessly exploit the present. Are we worried about freezing in the dark--or are we really worried about the newest electric gadgets and air conditioners? Are we concerned about transportation--or are we really worried about the number and size of our vehicles? The question is not of needs, but of wants.

On achieving manhood, Brown Eagle changed his name to Thunder Dancing for the giant falls on the river. He became a chief for the deer hunts and was skilled in stalking game. One evening he walked to the head of the falls, dodging the tangles of buffalo berry, and passed through the outstretched willows. He stood on a large rock just offshore. The rills across the river were foamy blue in the shadow of the mountains. Many seasons had passed--many were the hunts in high mountain meadows, many were the winters along the river, many were the times he had visited this place--too many moons to count. He had aged like a giant cedar, skin wrinkled but sturdy in a timeless way. He recalled that mystical morning when his spirit became as one with the falls, a power that sustained him through life.

He pondered memories of the valley and boyhood days when he stalked mallards along the river. His thoughts were focused on the continuing circle of the seasons, seasons that shaped his life. He could not foresee the changes to come, nor would he have accepted them if he could. But even if he could have understood our need to manipulate and harness nature, and even if he could have understood the rapid rate at which we are squandering our diminishing resources, he wouldn't have understood the desire to dam Kootenai Falls. We can't expect him to have understood the future, but do *we*? ■

• *A resolution was recently passed by the Confederated Salish and Kootenai tribes pertaining to Kootenai Falls and urging protection of the area's wildlife and recognition of the area and surroundings as part of the Kootenai tribe's history, particularly the Kootenai camps, the Kootenai hunting parties and the legends that originated from the land. The resolution was introduced by Tribal Council member Laurence Kenmille.*—Ed.

photo: Harry Engels

HONKER!

by Tom Hinz

Whether you call him honker or Canada goose, he's one of the most remarkable game birds on the North American continent. With intelligent management, eastern Montana's goose flock can continue to provide recreation and enjoyment for future generations of hunters, photographers and goose admirers.

AS THE SUN NEARS the rim of the river's breaks to the southeast, geese begin to call loudly from a river island. Suddenly, the volume, intensity and speed increase, a signal that the first flock has taken wing. From their shallow goose pits in a cornfield, the hunters can see geese heading toward the decoy spread. As the geese reach the field and begin to descend, the hunters can hear their powerful wings carving the early morning air. Lying cramped in their pits, the hunters are almost afraid to breathe.

Any slight movement may cause an old leader to sound the alarm that will suddenly send the flock skyward again. But luck and careful preparation are with the hunters this morning, and the big birds continue to parachute down. Shotguns bark, and three plump geese drop from the flock. They will grace dinner tables on Thanksgiving Day, a fitting tribute to this majestic member of the waterfowl clan.

One of the most remarkable game birds on the North American continent, it has been called "Canadian honker," "Canadian goose," "honker" and just plain "goose." But the bird so many of us hunt, photograph or just plain admire is properly called the Canada goose (*Branta canadensis*).

Although Canada is home for a large portion of the continental goose flock, much of Montana provides goose habitat during at least three seasons of the year. Eastern Montana has probably always had nesting Canada geese, since geese nested historically throughout the Great Plains. Montana, however, differs from the other Great Plains states in that many of them lost large portions of their breeding populations through habitat degradation and the encroachment of civilization. Fortunately, nesting Canada geese respond rapidly to management and many states now have sizable goose populations as a result of artificial propagation, transplanting and nest construction.

As a new friend recently pointed out, identifying geese in the field is easy. To her, the difference was obvious: "You can tell geese from ducks because geese have longer necks." She was right--that long neck was

something I'd always overlooked, except when a goose about to be banded on my lap reached around behind my back and grabbed a mouthful of skin with a quick snap. In addition to their long necks, Canada geese are easily recognized by their black heads and white cheeks, black feet and legs, varying shades of grey on their breasts and a subtle blend of black and brown feathers on their sides and back. In flight, they expose a distinctive white crescent above their black tail feathers.

Color variations serve as one means of differentiating what are currently believed to be 11 races of Canada geese. Montana has two native races, the giant Canada goose (*B.c. maxima*) and the Great Basin Canada goose (*B.c. moffitti*). The lesser Canada goose (*B.c. parvipes*) and the cackling goose (*B.c. hutchinsii*) appear during migration in eastern Montana. Because of their similar physical appearance and overlap in breeding ranges, it is likely that many of eastern Montana's geese are hybrids of the Great Basin and giant races. Giant Canada geese, which may weigh more than 20 pounds, were historically the primary native goose of the Great Plains, including eastern Montana. But where interbreeding with the somewhat smaller Great Basin race occurs, it is a rare goose that tips the scales over 20 pounds. Birds taken by hunters commonly weigh between 13 and 15 pounds. These certainly contrast with the smaller races seen in eastern Montana during November and March which range from three to five pounds (the cackling geese), and the lesser Canadas which weigh between five and seven pounds.

Not only do the smaller races differ in size and coloration, but they have faster wing beats and higher voices. Many times the hunter or observer may see migrant flocks of bigger geese with a sprinkling of smaller ones mixed in. These smaller races travel between wintering grounds in Colorado and their breeding grounds in northern Canada.

Due to construction of stock ponds on eastern Montana's prairies and the advent of large acreages of crop land, the goose population now is probably greater than it ever was. Since the 1950s, the Canada goose population in southeastern Montana has increased by several hundred percent.

In 1956, an aerial census conducted on the Yellowstone River between Miles City and the town of Bighorn yielded an estimated 26 breeding pairs. An aerial census of that same stretch in 1978 produced an estimated population of 187 breeding pairs. The total estimated breeding population on the Yellowstone River between Billings and the North Dakota border in 1978 was 450 breeding pairs. On the lower Yellowstone's major tributaries--the Bighorn, Tongue and Powder rivers--there are an estimated 200 breeding pairs. Added to that are the geese which nest on stock ponds south of the Missouri River to the Montana-Wyoming border. Even if the stock pond breeding population in this area were only one pair per 100 square miles, that would still represent about 350 breeding pairs. Thus, the total Canada goose breeding population of eastern Montana south of the Missouri is probably over 1,000 pairs. In the summer, that represents about 4,400 adults and young, assuming that at least 60% of the pairs raise four young to flight stage. Adding the nonbreeding segment of the population, which is probably at least 1,000 birds, gives a rough estimate of about 5,400 resident geese. That's quite a contrast with conditions 25 years ago, when residents of southeastern Montana thought it unusual to even see a goose except during migration and even more unusual to shoot one.

GOOSE BIOLOGY

Most of us tend to think of Canada geese in terms of their activities in the fall or maybe the spring, when their legions grace the fields and waterways which intercept migration corridors in Montana. But the life cycle of the goose encompasses some very distinct and unusual changes throughout the year.

With the onset of the breeding season in late March, much chasing, biting and feather pulling takes place and the din of quarreling echoes from the river bank to the communal feeding fields. Hormones surging through the body cause tempers to flare, turning goose against goose, pair against pair and even parents against young. Such squabbling has a purpose, though, as it provides sufficient space for the pairs to build their nests and raise their young. Those geese too young and inexperienced to raise their first family form the ranks of the nonbreeders; they are soon joined by those whose efforts to raise broods have failed. Nonbreeders remain on the breeding grounds until sometime in May or June then they head north to a wetland area to molt.

While this is going on in the river valleys, the frozen ponds begin to thaw under the spring sun and their opening attracts pairs of geese. Many will return to nest on the same pond they did the previous year. It's sometimes a gamble because low water can provide predators easy access to island nests, and bank nests can be trampled by cattle.

The first step in the nesting sequence is establishing a territory. The size of the territory is probably related to the desirability of the area for nesting--the more hotly contested the real estate, the less ground each pair is likely to end up with.

Once territories are established, a nest site is chosen. Distances between nests in small, highly desirable territories may be only 10-20 feet, while in less suitable areas, nest sites may be miles apart. A sandy, midstream island in the Yellowstone River, perhaps less than 10 acres in size, is probably the most desirable nesting site in eastern Montana; such a site may be divided into 10 or more territories. In contrast, a small prairie reservoir, lacking islands, trees, cliffs or peninsulas, would be least acceptable, and would be unlikely to attract more than one nesting pair.

With the territory established, the pair begins to defend it from other geese. After a short time, the female selects a nest site, scrapes out a bowl-shaped depression and collects leaves, twigs, grass or whatever is handy to build the rim of the nest and line the sandy cavity. In addition, she adds down from her breast. Soon the first egg is deposited and at a laying rate of two eggs every three days, the hen completes her clutch. By the end of March, many of the river geese will have their clutches completed. However, in certain areas and years when spring thaw occurs late, geese may get a slow start. Geese frustrated by a delay in nesting, or whose efforts are inhibited by other pairs, commonly strew their eggs haphazardly around the nesting areas.

Many territory-holding geese attempting to nest for the first time may not actually build a nest or complete a clutch. Although important to the population in years to come, these subadults will not add to that year's production and will leave the nesting areas before the onset of the molt.

Actively laying hens will complete their clutches in two weeks or less, depositing from two to 10 eggs, but most commonly from four to six. After the clutch has been completed, the hen begins four weeks of incubation, with progressively shorter and less frequent periods away from the nest. Both the hen and her eggs will be sought by raccoons, coyotes, foxes and dogs. On the Yellowstone River, heavy spring rains which cause high water and possible nest flooding are an ever-present danger. Fortunately, about two-thirds of the nesting geese, through a combination of instinct, learned behavior and luck, escape these perils and successfully hatch their eggs.

If undisturbed, the newly hatched brood will spend a day or two in the nest, after which they are led to a nearby brood-rearing area. There, under cover of tall cottonwoods, heavy underbrush or rows of grain, the parents molt while their young begin the journey toward adulthood.

The distance traveled from the nest to the brood-rearing area may be many miles or only a few yards. Pond-nesting geese often move their brood several miles overland to the security of a much larger pond. By injecting colored dyes into eggs in Yellowstone River nests, we have been able to chart the movements of colored goslings. Some have moved just a few hundred feet from their nesting island to a hay field, while others have moved up a small creek drainage to a remote reservoir 10 miles away.

The normally majestic Canada goose on its brood-rearing grounds in the summer is a sorry sight. The previous 10½ months have resulted in extensive wear and damage to wing and tail feathers and it is now time for replacement. Unlike most other North American birds which gradually molt flight feathers, waterfowl lose all their flight feathers at once and are flightless for several weeks.

Molted feathers must be replaced quickly, thus putting a real strain on the goose's energy budget. By nature's design this works out well, for the adult geese at this time are raising their young to flight stage. For the first three weeks of the goslings' lives, the parents are still able to fly, although a few flight feathers may drift down behind them. Once the young reach about three weeks old, their parents become flightless and stay that way for about 40 days.

During this period, the families sometimes group into "gangs" and hide in the dense vegetation along rivers and ponds, avoiding predators by taking to the water and diving out of reach. A rich diet of green grass, grass seeds, other types of vegetation and insects hastens feather growth and development so that by late July most can fly. A little encouragement from a coyote, man or other potential predator often sends them skyward after feather growth is about 85% complete.

With their newly feathered wings, geese seek different areas for feeding and resting. In the early morning and late evening, they may travel to winter wheat fields to fill up on waste grain. As summer passes, geese sometimes travel from resting to feeding areas that are 40 miles or more apart. During this period, the young geese gradually increase in size and strength and the adults recover from the rigors of breeding and brood rearing.

By early September, the agricultural picture in the lower Yellowstone Valley rapidly changes, as cornfields are cut for silage. In addition, some of the spring-planted barley is ready for combining. Once harvested, the fields begin to attract geese, and feeding flights move back and forth twice daily from the river to the fields.

With some modifications, this pattern continues through fall. Hunting, fall plowing and unexplained changes in goose behavior cause geese to shift from field to field and often from river to pond and back again. By November, resident geese move frequently within their home range, and by doing so often avoid the hunter. With fall's first big snowstorm, geese from northern Montana and Canada begin to file through eastern Montana at a lively pace. Each morning the Yellowstone Valley resounds with the calling of new flocks. Colder temperatures freeze the reservoirs and the geese formerly using them begin their trek south. Continuing cold freezes most of the Yellowstone's reaches, leaving only a handful of geese there and less than 1,000 on the Bighorn River through the winter.

"Exploitation of southeastern Montana's water resources could spell doom for much of the lower Yellowstone's goose population."

In late February or early March, the sun begins to melt the snow and ice which has blanketed the goose's domain all winter. As the river ice cracks and groans and grudgingly yields up stretches of open water, the sky once again fills with noisy hordes. Canada, white-fronted and snow geese and other members of the waterfowl family are once again heading north across the prairies. The river banks, still bordered with ice, are soon peppered with flocks of waterfowl numbering in the thousands. With these flocks (most are heading north to distant nesting sites) come Montana's resident geese back for another year. After a three-month stay in eastern Colorado and New Mexico, they're anxious to get down to the business of raising another family.

The migrant flocks which stop along the Yellowstone may spend all day feeding in fields, pastures or even on golf courses--anywhere a tender green shoot peeks through the dead grass. As the days pass, the number of geese in the valley dwindles, each flock headed to its respective nesting area. Some travel to northern Canada, some to the southern prairie provinces, some to northeastern Montana and to Fort Peck Reservoir,

some to stock ponds north of the Yellowstone or some to a nest site on a river island. And so a cycle in the life of the Canada goose is completed, with the survivors of the preceding year ready to start the next generation.

THE CRITICAL TIME

It is during the brood-rearing period, when young geese are maturing and adults flightless, that biologists band some resident geese. Every year since 1972, Department of Fish, Wildlife and Parks (DFWP) personnel have braved Yellowstone River flood waters, rattlesnakes, mosquitoes and poison ivy to pursue and capture flightless geese. To date, nearly 1,600 geese have been banded with standard aluminum leg bands. Hunter returns of these bands (190) have begun to indicate migration timing and routes as well as mortality of resident geese. Mortality from hunting appears to be light, except in Colorado where heavy gunning pressure may cut into the breeding flock. Only a larger number of banded birds in future years can satisfactorily prove or disprove this contention. We do know that 50% of the band returns received through 1978 have come from Colorado, 33% from Montana and decreasing numbers from Wyoming, Saskatchewan, New Mexico, Nebraska, Utah, Texas and Alberta.

To supplement the fragmentary information obtained from return of leg bands, in 1975 we initiated a goose neck-banding program in the Yellowstone Basin. Since, DFWP personnel have marked over 1,300 geese with three-inch-wide green or yellow plastic neck collars, numbered so each goose can be individually identified.

Observations of these banded birds have shown that during the flightless period, the birds' movements are quite limited; while they occasionally make a dangerous trek over land or drift down the river, they usually are content to stay in the same area. Once their flight feathers have returned, however, the neck-banded birds begin a seemingly endless pattern of daily, monthly and yearly wanderings.

THE PAIR AND THE FAMILY

Banding an entire goose family is a

Two of the 11 races of Canada geese are native to Montana: the giant Canada goose and the Great Basin Canada goose (upper left photo: Harry Engels). Future observations of neck-banded Canada geese will provide valuable information on movements of the southeastern Montana flock (lower left DFWP photo: Jim Schrieber). Hunters harvest between 3,000 and 4,000 geese annually in eastern Montana (above photo: Mike Crider).

rare occurrence because of the difficulty in singling out one family and then catching all the members. Banding of partial families has shown that geese do indeed mate for life as long as both partners survive. If one mate dies, the survivor will mate with a new partner the next breeding season. The brood remains with the parents at least until the fall migration. Sometime between their departure in fall and their return in the spring, the young often become separated from their parents. Separation probably occurs during migration or on the wintering grounds where intensive hunting, flock mixing and extensive movements take place. Or possibly it happens when the adults begin to adopt an aggressive attitude toward other geese as the breeding season approaches. Other researchers have recorded this casting off of the young during territory establishment, but we have rarely observed this in neck-banded adults and their young on the lower Yellowstone.

Neck-banded adult females are often the first seen among spring migrants returning to the lower Yellowstone Valley. Observations of young neck banded the previous year indicate that by their first spring some of the yearling females also return to areas in which they were hatched, but do not actually nest. The yearling males, in contrast, are widely scattered. Some observations of yearling males have come from biologists as far away as Kansas, a state usually not within the migration corridor of eastern Montana's geese. Female geese, neck banded as goslings, have been observed to nest, lay eggs and defend a territory at the age of 2--but only rarely, and with limited success.

Movements of goose flocks with neck-collared individuals are often substantial during staging (the time between the acquisition of flight feathers and departure southward on the fall migration). Both river-nesting geese and their young often travel far during this period, both north and south. Collared geese have been seen on the Tongue River Reservoir (on the Montana-Wyoming border) and numerous other prairie reservoirs 40-50 miles north of the Yellowstone River. Fort Peck Reservoir, long suspected as a summer haunt of Yellowstone River geese, has been searched unsuccessfully for neck-banded geese.

One old wives' tale about goose behavior dispelled by the neck-banding program is the belief that hunting "drives the geese out of the country." Some goose hunters and ranchers "swear" that hunting pressure forces geese to leave their fall home ranges and immediately head south. We have learned that neck-banded geese do not do this, although hunting pressure appears to cause them to travel more widely and more often. A neck-banded goose may be seen on one reservoir in the evening, on a wheat field 20 miles away the next morning and on a different reservoir that afternoon. River geese respond to harassment by changing feeding fields, moving up or down the river or moving off the river to some secluded pond. They simply make themselves scarce by locating feeding and resting areas where they can go about the day's activities unbothered by man.

With the onset of cold weather in November or December, the ponds and rivers begin to freeze and the resident geese head south. Observations of neck-banded geese begin to decrease at this time. During the winter, the occasional flock that winters on the Yellowstone may have one or two neck-banded birds, but such a flock is probably not comprised entirely of resident geese. Geese that winter on the Bighorn River do not appear to be Yellowstone River geese, since no neck-banded geese from the Yellowstone have ever been recovered or observed on the Bighorn.

THE RESIDENTS ON VACATION

Although eastern Colorado isn't exactly a Palm Springs during winter, its warmer temperatures and open waters do attract large numbers of wintering waterfowl. About 40,000 Canada geese congregate around Fort Collins, Greeley, Boulder and Denver, the center of the wintering grounds. Hunting pressure is heavy, but some refuge is provided by the

numerous reservoirs in the area, many of which are closed to goose hunting. The wintering grounds also contain extensive agricultural land which provides the geese with food. Many of the geese become quite tame, appearing on golf courses, lawns and in city parks. Some neck-banded birds captured in the wilds of eastern Montana have been hand fed in a Denver park. In extremely cold years, neck-banded geese have been seen on the Arkansas River in southern Colorado and in the Rio Grande Valley of New Mexico, the historical wintering grounds of the flock until recent years. By closing key resting areas to hunting, restoring flocks and keeping key reservoirs open in the winter, eastern Colorado is attracting flocks that previously went to New Mexico.

HUNTERS AS GAME MANAGERS

Movements of individual neck-banded birds are often too extensive to be effectively covered by a handful of ground observers with spotting scopes. Fortunately, hunters play an important role in tracing the movements of the flocks by shooting some of the marked birds and reporting them to the DFWP. Although such reports are the last for those particular birds, many of these geese would otherwise go unobserved. The hunter becomes a valuable management tool by providing information on the goose flock.

Hunters are estimated to harvest between 3,000 and 4,000 geese annually in eastern Montana. Of these, hunters in southeastern Montana take about 1,100 geese, 32% of the total harvest. Many of these are migrant geese which nested in areas far to the north. If we assume the resident flock numbers at least 5,400 geese and that an annual hunting mortality of 35% will not cause a significant decline in the population, nearly 2,000 of the resident geese could be harvested annually. Half of the harvest now goes to Colorado hunters. Despite this, the resident goose harvest by Montana hunters could still be 1,000 birds. It is probably only half that. To increase the resident goose harvest by Montana hunters, the DFWP has liberalized eastern Montana's goose hunting regulations to provide the maximum harvest possible within the guidelines established by the U.S. Fish and Wildlife Service.

One problem hindering this objective is public opinion in southeastern Montana on the subject of hunting geese on the Yellowstone. Since November 1958, public opinion has dictated closure of some sections of the lower Yellowstone River to waterfowl hunting on the premise of enlarging the goose flock. The DFWP would prefer to allow over-water shooting on the river, but without the support of the public, such a management program cannot be realized. Since the Yellowstone closure, the goose flock has increased (as have flocks in many other parts of North America), but the increase cannot be attributed solely to the river closure. Other reasons, such as changes in agricultural practices and stock pond construction, are also involved. Today the flock size is probably not limited by natural mortality or hunting in Montana, but rather by hunting mortality which occurs south of Montana. Keeping the river closed simply puts geese which could go to eastern Montana sportsmen into the bags of Colorado hunters.

GOOSE HUNTING: Patience Pays

Successful goose hunters spend a lot of time pursuing their sport. Simply stumbling out into a cornfield on a fall morning, haphazardly setting up some decoys and waiting for the flocks to come in isn't very productive. Successful field shooters scout frequently in early morning and in the evening when geese are likely to be flying from wet areas to fields. Then, it's a matter of following them to see in which field they land.

Close inspection of the field tells the hunter how many geese are using it, from which way they're coming and where they are feeding. Once the field is spotted, the hunter should locate the landowner and ask permission to hunt. With the landowner's permission under his belt, the hunter can begin to plan his or her strategy. The hunter must dig pits (or locate a suitable hiding place) and set out decoys after the geese have left the field. For a morning hunt, pits must be dug at night or before sunrise the next day. Hunters welcomed back another time always fill in their pits after the hunt.

Plastic shell-type decoys are most commonly used, since they're light and generally produce good results. The decoys should be positioned in the area where most of the feeding was done the night before (this area

The DFWP recently conducted public hearings on abandoning the "refuge" on the Yellowstone. This would allow department biologists to open certain sections of the river at critical times to waterfowl hunting. The department's objective is to permit a greater goose harvest and also to break up some traditional overconcentrations of ducks which last winter resulted in disease outbreaks and duck die-offs. Where and when closures are necessary to protect the birds, they will be left in effect.

Despite the current shooting closures on the lower Yellowstone, goose hunting in southeastern Montana is good. Numerous cornfields and small grain acreages along the river bottom attract flocks of migrant and resident geese throughout the fall. The best hunting generally occurs on opening weekend and in November, although it can be good any time if the hunter looks for geese in the right places.

The right place may be a gravel bar on a stretch of the river open to hunting, along the edge of a remote pond, in a large dry land wheat field or in a cornfield in the valley. Hunters are currently limited to two geese daily and four in possession. Some hunters are satisfied in taking just one bird, while others appear to be happy just watching a flock swing past their decoys.

The best shooting is enjoyed by hunters who scout the fields to find feeding geese, wait until the geese return to water for the night, then dig pits and set out decoys in the hope the geese will return the following day. A decoy spread can also be set up on a pond or river gravel bar while the geese are in the fields feeding. This works best in the morning because geese usually return to their resting areas after sundown. Geese are also occasionally taken by sneaking up on them in a field or reservoir, but this is the least productive method.

With intelligent management, the future of eastern Montana's goose flock, like so many others across the country, looks bright. Manipulating goose numbers is possible through regulating harvest and providing goose nesting sites in areas where the numbers are insufficient. Such projects have been very successful in northern Montana and are now getting under way in southeastern Montana. Through monitoring populations, manipulating regulations and improving nesting habitat, the flock should increase. One major threat stands in the way--the same one endangering all continental waterfowl populations--habitat degradation. In southeastern Montana this threat is manifested by potential alteration of the Yellowstone River floodplain.

Exploitation of southeastern Montana's water resources could spell doom for much of the lower Yellowstone's goose population. The reason is simple: If too much water is taken out of the river, the islands will lose their security for nesting. If the flow of the river is controlled with dams, some islands will be lost, some normally bare islands will become crowded with vegetation and many backwaters and side channels will disappear. In short, the attractiveness of the river to Canada geese will be greatly reduced. This has already occurred on the Bighorn River, where mainstream dam construction has resulted in stagnation of the island formation process and resulted in encroachment of vegetation onto waterfowl resting and nesting areas. The Bighorn has grown old and has declined in terms of waterfowl productivity. It is now protected from spring floods, which on the Yellowstone still flush and rejuvenate the valley every June, clearing vegetation from islands and banks, building and destroying islands and making the river an attractive place for geese.

It's up to Montanans to decide if the lower Yellowstone Valley will continue to resound with goose music. Through sound management and habitat protection, the Canada goose population of southeastern Montana can provide increasing recreation and enjoyment for future generations of hunters, photographers and goose admirers. ■

will have the greatest concentration of goose droppings). The decoys should be arranged as if they had just landed and are moving toward the area with the most feed. Uniform spacing between decoys is undesirable, since geese are more likely to feed in a "clumped" pattern.

With decoys set out the hunter has only to cover up his pit and, with call in hand, wait for the geese. Goose calling is a real art--one not easily mastered. A high-quality call and familiarity with the goose's variety of vocalizations are essential for effective calling. An inexperienced caller will be better off to call as little as possible.

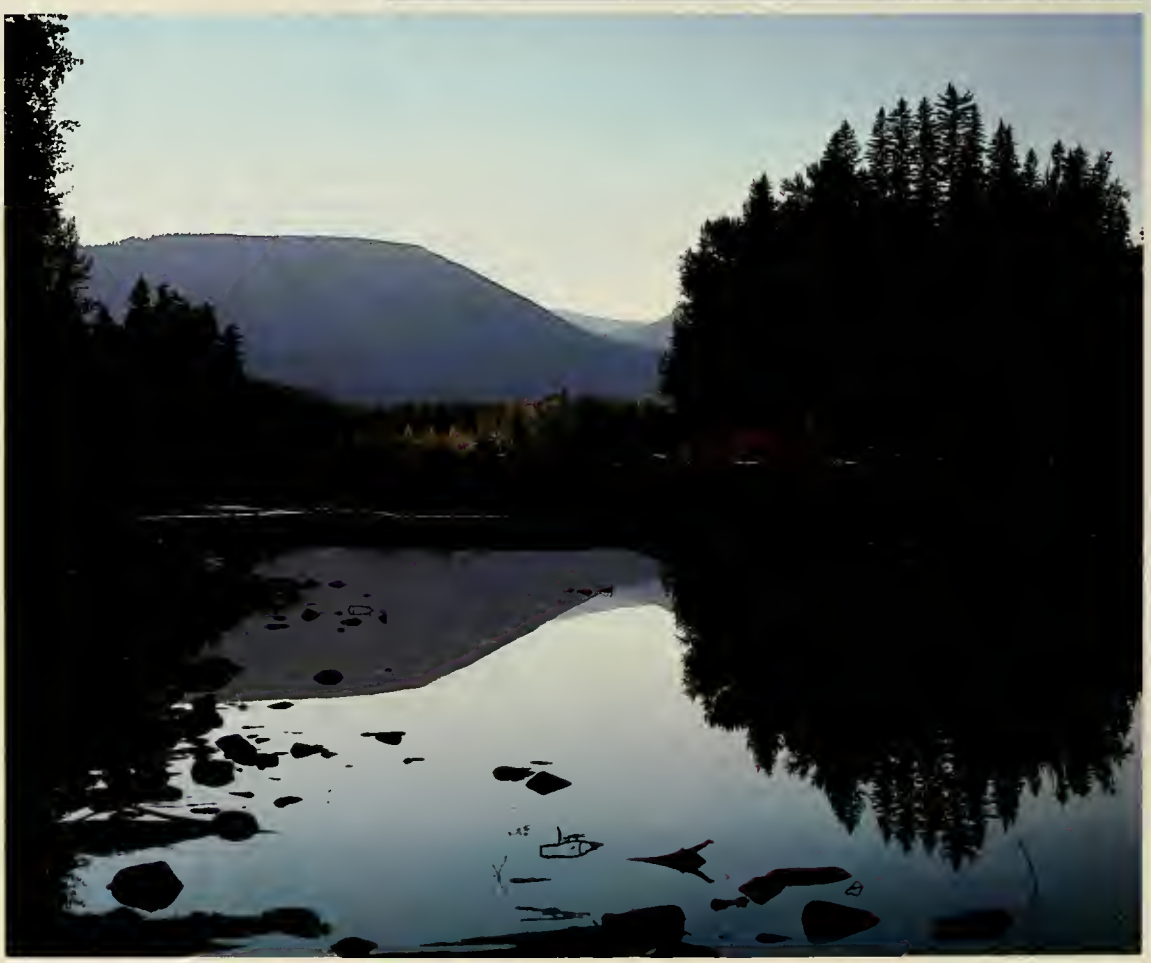
If the geese don't return, it's usually because someone or something frightened them from the field during the previous feeding period. Other possibilities are that they were chased from their resting area on the water or that they simply changed their minds and moved to another field to feed. But assuming all has gone well up to this point, the geese will eventually show up at feeding time, usually right before sunrise or at sundown. On a cloudy, rainy or snowy day, the timetable is less reliable--geese may be in the field almost any time or possibly all day. Such behavior is exhibited on bitterly cold days late in the season. If a hunter is willing to brave the cold, hunting can be very productive and preparation limited to covering up under a sheet in a snowy field.

The Canada goose is a formidable bird, and heavy shot is needed to bring it down. Most hunters prefer a 12-gauge gun--choked modified or full--with BB, #2 or #4 shot. Placing the shot charge in the head and neck area will result in clean kills, and this requires healthy leads. Geese can often endure a body wound long enough to escape to their resting areas on the water.

As most dyed-in-the-wool goose hunters will testify, even the best laid plans can go awry when waiting for a flock of geese to come in to a set of decoys. Patience is a hunter's greatest asset. Waiting until the geese are as close as they're going to come is difficult, but such patience pays dividends. A 10-pound goose looks close, even when it's out of range. The properly equipped goose hunter who has learned to estimate range and lead his target correctly will consistently take home birds for the table.

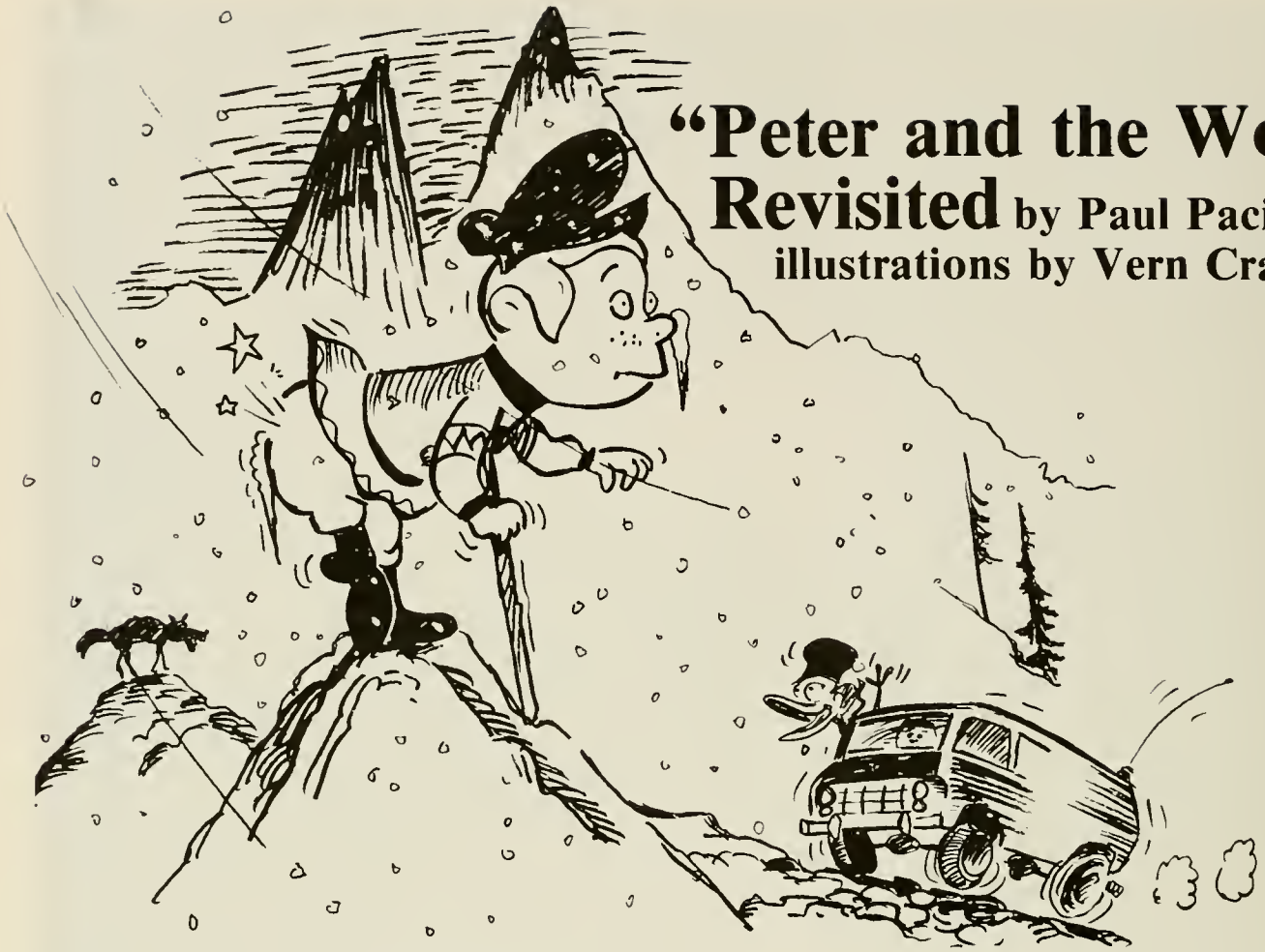
Subtle Shades of Nature

photos by Craig Sharpe



". . . its surface is lit up here and there with a fine-grained silvery sparkle which makes the river appear something celestial . . . ."
—Henry David Thoreau, "On Man and Nature" (reprinted by permission of the Peter Pauper Press; Mount Vernon, New York)

"So, we see the river and the lands of its watershed as a great living organism, with its heart in the mountains that supply its life blood."—John H. Storer, "The Web of Life"
(reprinted by permission of the Devin-Adair Company; Old Greenwich, Connecticut)



"Peter and the Wolf" Revisited

by Paul Pacini

illustrations by Vern Craig

NOW THIS IS THE STORY of Peter and the wolf--with a few liberties. Armed only with his trusty wooden gun, Peter tries to steal out of his house to hunt the terrible wolf which roams the northern Russian forests in winter. But Peter's grandpapa thinks that little boys like Peter are too young to hunt the awesome wolf. While his grandpapa dozes, Peter escapes. Out of the cottage, across the snow and into the dark forest, his gun and a coil of rope ready.

Well, what do you know? Here's Sasha, Peter's excitable little bird friend. "Hello Petey", says Sasha, "what goes? Oh boy, a gun--loaded too! Going hunting? Oh, that's for me. Come on Petey. We'll show that old wolf."

They're just the kids who can do it. Comrades forever.

Our little duo of intrepid hunters sets out to find the wolf. Oh, the wolf (ROAR) is fiercer than we thought as he chases Peter up the nearest sturdy tree. Will this villain imprison Peter in the tree through the numbing cold of a Russian winter night?

Peter is making a lasso and Sasha is looping it over a stocky branch. Careful now, Peter! Careful, Sasha! Take aim! Oh, they've got the wolf. They've roped him by the tail. Oh pull, now. Pull harder! Oh you can pull harder than that. Pull him up and right off his feet. That's it!

Sasha! Don't get too close to those awful jaws. In fact, you'd better fly, Sasha. Good for you, Sasha, keep flying! Oh this is bad. I can't look! I think I must look. Peter! Sasha! The rope is breaking! Run! Run for your lives! Fly Sasha! Fly for help! Faster, Sasha, faster! Hurry Sasha, you've got to get help. Oh, he'll never make it in time.

Just when things are looking blackest, hark, what's this we hear? What's this we see? Why it's the hunters--Mischa, Jascha and Vladimir. And here comes little Sasha, flying as though Peter's very life depended on it--which it does. Tell them Sasha, tell the hunters W—O—L—F--wolf!

"Wolf!" said the hunters. "We'll come to the rescue!" And of course everyone lives happily ever after, except the wolf.

This is a fairy tale played in real life more often than one might expect, with different casting of course. You may have participated in the production last year where you hunted. In one situation, Peter got himself in a predicament just as in the original script--only it wasn't up a tree with a snarling wolf below. It was near the top of a lonely, wind-swept ridge on an October elk hunt and the wolf took the form of a painfully dislocated hip joint. True to form, Sasha was dispatched for help but a new dimension was added to this version.

It was 5 o'clock in the afternoon and in October that means the amount of daylight left could be measured in minutes. As if the situation was not bad enough, those swirling grey clouds engulfing the valley below and the crisp, biting winds ahead of them could spell only one thing--the first real snowstorm of the season. After a long hot summer, this sight is sometimes exciting and even

refreshing; but in this predicament, it was ominous.

Peter, immobilized by his hip and dressed for brisk walking and climbing on a pleasant fall day, was in no condition to weather a night like this promised to be. "Just when things are looking blackest, hark, what's this we hear? What's this we see?" Peter could scarcely believe his eyes in the waning light and blowing snow. Across the boulder-strewn, moonlike landscape of that foreboding ridge top bounced a beautiful sight. It was a Search and Rescue 4-wheel-drive vehicle with Sasha pointing the way from the passenger seat. And of course everyone lived happily ever after. Were it not for the capability of a 4-wheel-drive vehicle, help may not have reached Peter until the next morning and by then Peter may have died of hypothermia.

Four-wheel-drive (4WD) vehicles may go by any number of names and abbreviations four-by-four (4X4), all-terrain-vehicle (ATV), general purpose (GP) vehicle, utility vehicle (UV), off-road vehicle (ORV) and others. No matter which name you use, these vehicles have proved their worth to everyone from the suburbanite going home from work after a heavy snowfall to the military. In fact, as with much of the hardware now in common outdoor use, light 4-wheel-drive vehicles were a product of war.

Shortly before World War II, the Army decided it needed a general purpose vehicle. The generals wanted something adaptable, as useful in the jungles of the South Pacific as on the deserts of North Africa. The now-classic jeep resulted. After the war, thousands of these rugged little cars found their way into the hands of civilians and gained a considerable following. Soon after the war, Willys (later absorbed by American Motors) brought out the first 4-wheel-drive intended solely for public consumption. For the next 25 years or so, this company catered to a small but steady demand for its 4-wheel-drive vehicles. Then in the late '60s, the recreational vehicle boom hit, along with zooming sales of campers and motor homes.[1]

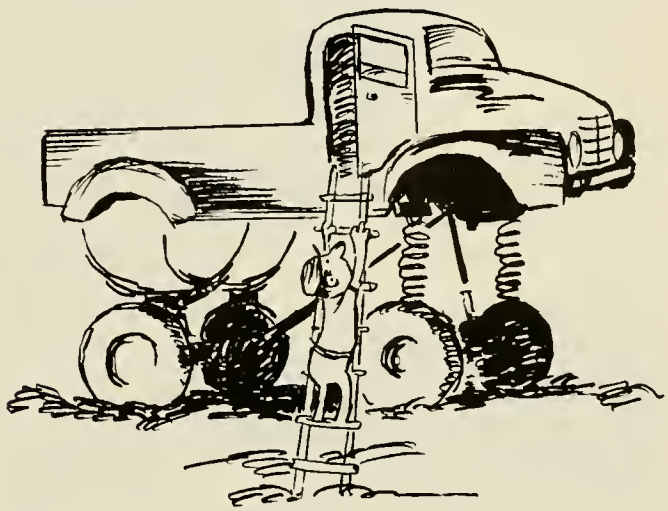
To give this boom some real dimension, let's take a quick look at some figures. During the past eight years, light-truck sales have grown by more than 10% annually, compared with 2½% for automobiles. In 1960, General Motors' huge Chevrolet division sold 5.3 cars for every truck; today the ratio is less than 2-to-1. J. Patrick Kaine, president of International Harvester's $3-billion-plus truck group, says Harvester sold so many Scout utility vehicles that "we ran out of capacity." Kaine predicted 4-wheel-drive sales could reach 325,000 units in 1978, up 35% from the previous year. Thirty-five percent of the utility vehicle market belongs to Jeep and sales had increased by more than 30% by September of 1978 over 1977 sales figures. Ford sold nearly 40,000 Broncos in the first half of 1978, compared with 7,000 in the first half of 1977.[2]

Call it the most unexpected twist in American automotive enthusiasm since the country went cuckoo for gocarts, but the fact remains that this nation--known far and wide for its fierce loyalty to vehicular plushness and comfort--has gone bananas for trucks. Everything from 18-wheel, twin-stack, 13-speed diesel Kenworths and Peterbilts (which we do not drive) to endless legions of pickups and other UVs of all shapes and sizes (which we do drive--in stupefying numbers--everywhere, from fiestas to funerals, from grocery stores to grand opera).

Nobody has quite figured out why this is happening. Surely, some of the phenomenon is related to the fact that Americans have more leisure time now. Pickups and other recreational vehicles are well-suited to all sorts of weekend activity, from hauling or carrying various camper units to trucking snowmobiles, lumber or firewood.

However, there is more to it, vaguely related to America's shift toward the heartland and the traditions of down home, as interpreted by such latter-day balladeers as Willie Nelson, C.W. McCall and, in a broader sense, the country boy from Colorado, John Denver. There is little mistaking the fact that the nostalgia craze has set hundreds of thousands of Americans loose on the highways in trucks. From Sunset Boulevard to Fifth Avenue, one can witness the amazing sight of otherwise sane adults who have forsaken their Buick Electra 225s, with the quadraphonic sound and the tilt-and-telescope steering wheels and the crushed velour upholstery, lumping along in short-bed pickup trucks and towering 4-wheel-drive behemoths that look as if they ought to be hauling pipe on the North Slope.[3]

On the surface, there seems to be no real reason for alarm, and one can even find some humor in it. For many, the craze over 4-wheel-drive vehicles is nothing more than



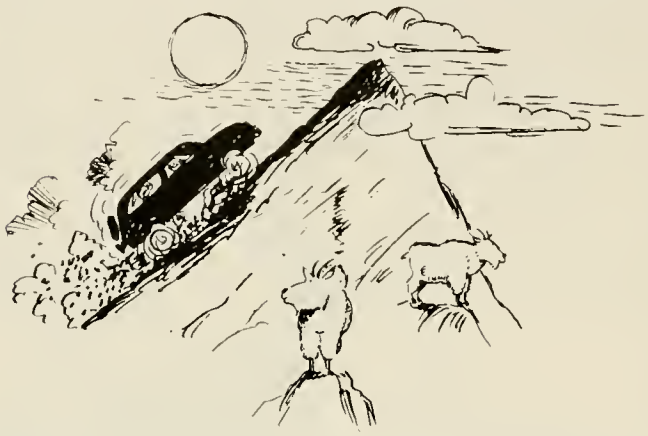
an innocent fad to be compared with hula-hoops, pencil-leg blue jeans or miniskirts--except for the price tag. What's wrong with enjoying life? It's short enough. But I have yet to see a hula-hoop claw its way up a grassy hillside just to see if it could make it to the top. To my knowledge, no farmer or rancher has closed his land to access because of the threat the pencil-leg blue jean posed. And the miniskirt, however dangerous on a downtown sidewalk during noon traffic, has never torn down a landowner's gate.

In fact, the mere mention of 4-wheel-drive vehicles causes some people to grit their teeth and visualize beered-up yahoos charging full-throttle over a pristine prairie.[4] What's worse, the image is sometimes not so preposterous. Throughout Montana, off-roaders have damaged both private and public property, playing not the role of the rescuing hunter, but of Peter's wolf.

A 4-wheel-drive vehicle represents a large bundle of potential power which may be unleashed in the name of either good or evil. The decision (ability for sound judgment) rests with the driver. What is behind the poor judg-

ment displayed by some off-roaders--otherwise considerate, thoughtful persons? Let's go all the way back to when this person first considers purchasing a 4-wheel-drive vehicle. What he needs as much as its purchase price is a generous jigger of self-analysis, especially if he feels he must now find a way to justify the $10,000-$12,000 cash outlay.

Take for example the deer hunter who believes he has to get way back up in the high country, where every bone in his body tells him there must be a big buck with his name on it. This hunter leaves the established roads and drives up there as if he were vying with Parnelli Jones for



supremacy in the Baja. If he would have gotten out of his vehicle and walked from the end of the road, he probably would have had a much better chance of seeing his quarry instead of scaring it into the next county! Is he hunting or does the 4-wheel-drive embody some deeply rooted need of his ego?

Maybe the ego dominates this situation more than we realize. What is this thing called "ego"? "Webster's Seventh New Collegiate Dictionary" defines ego as "the conscious part of the personality that is derived from the id through contacts with reality and that mediates the demands of the id, superego, and external reality." To understand this definition, we should define id and superego: id--"the undifferentiated source of the organism's energy . . . ." and superego--"a major sector of the psyche . . . that aids in character formation by reflecting parental conscience and the rules of society."

In other words, the ego is the part of the personality at the helm as we navigate through the sea of life. It makes its navigational decisions based on experience gained in reality and tempered by the superego. The ego is a necessary, important, powerful part of the human psyche. But just like Achilles' heel, Goliath's temple or Samson's hair, the ego is vulnerable. Its vulnerability is its own stimulated overactivity--stimulation which often comes from external sources.

Some unscrupulous or at least unthinking and unconcerned businessmen and advertisers have exploited this vulnerability in the 4-wheel-drive market, to the detriment of our good judgment. We have probably all seen some of the ego-stroking television commercials aired during the last 4X4 season (fall 1978-winter 1979). Allow me to recap a few:

First there's the local ad which pictures a 4-wheel-drive leaving the beaten path for the rugged high country as this very macho voice extols, "Only a 4-wheel-drive can get you into where the game is and then out again." If that were true, our forefathers would have starved trying to get in, or died of exposure after they got there.

And then there's the one that pictures a peaceful, grass-covered hill which appears untouched by human hands. Then a voice asks, "Did you ever wonder what was at the top of a mountain?" In a cloud of dust a 4X4 bursts on the scene and scratches its way to the top. Of course it's all worth it because, upon reaching the summit, a lovely young woman steps out and takes a snapshot of the yet unscathed scenery beyond.

My favorite is the national ad which pictures a clean-cut, red-blooded American father and the apple-pie-baking mother of his children going on a picnic. The whole family is bouncing down a country road in their new 4X4 when the Mrs. exclaims, "The road looks a little squishy up ahead." However, this will not dampen the family's spirits for the father shakes his head in determination and proclaims with both hands on the wheel, "My [brand-X 4X4] can go anywhere!" And so it appears, as the four lugged tires start churning valuable marshland habitat into a pool of mud. The marsh they traveled through (probably about 100 feet) did have a previous track through it, possibly made during the rehearsal.

The same manufacturer has another man-and-his-machine ad in which a few obvious nobodies refuse to drive their puny little foreign-made economy truck up a boulder-strewn, rutted incline. To the envy of all, this daring young man rolls up in his new brand-X 4X4 and immediately wins over the lovely blonde bystander. Then with a chuckle and a flick of the wrist, he's in low gear and off to show what can be done with the right machinery. Half of the hillside seems to be blasted into the air as he fishtails his way up the hill. Once on top, the girl snuggles closer to our hero and giggles, "That was fun!"

Of course there is no law against such advertising, and we certainly don't need another "big brother" law. But we must recognize these ads for what they are: environmentally unconcerned attempts to sell a product by demonstrating how to have fun and influence others while mutilating the countryside.

None of us believes these commercials have any negative effect on us and we certainly wouldn't pull any of the antics suggested by them, but look again. Every year we see more and more lasting scars on the landscape and more and more "no trespassing" signs. This type of advertising subtly affects our minds. There is a bit of the excitable and impressionable Sasha in all of us and whether we consciously realize it, we are searching for that fair-haired companion at the top of the next hill. In the process, our 4-wheel-drive vehicles may be transforming us from the rescuing hunters to the snarling, dust-breathing wolf.■

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DFWP photo: Tom Warren

Poaching: YOU are the Victim

by Mel Wojcik

YOU HAVE NO DOUBT read in *Montana Outdoors* and other outdoor magazines of the many projects under way to measure game harvests, habitat loss, predation, animals lost to disease and other natural mortality. Has anything been left out? Yes--the poacher. I'm sure you've heard of him. He is often the topic of conversation over a beer or sitting around a campfire; he is even discussed at sportsmen's club meetings. We know he exists and, in fact, most of us know one or know of one. Tales of his activities may even equate him with the likes of Jeremiah Johnson, but he is somewhat less heroic when we realistically analyze him.

According to Louis Kis, warden captain for the Department of Fish, Wildlife and Parks (DFWP) in Kalispell, poached game animals in his region include grizzly, moose, elk and deer. In 1976, 1977 and 1978, radio-collared grizzly bears were poached in Larch Creek, the Yaak and the South Fork of the Flathead. In 1977, two bull moose were discovered; the poachers took about 30 pounds of meat and the antlers. And, as Kis points out, "Of course, there is your usual amount of spotlighting of deer. We suspect there is some selling of meat, too, but we haven't been able to get a finger on it yet." Law enforcement authorities in the Kalispell area are also investigating a poaching club in an outlying area and some illegal wildlife activities in Glacier National Park.

Hank Fabich, DFWP game warden in Livingston, and Yellowstone National Park officials documented 15 illegally killed bighorn sheep during the winter of 1977-78 near Gardiner. Of these known violations, a few arrests were made. How many more violations go completely undetected? Who knows?

A few years ago, Fabich discovered 16, 14 and 12 dead deer on three different mornings. He recalled, "Evidently,

there were three individuals working the area. Two deer would be shot in one area. Two individuals would be left out of the vehicle to tend to the animals. The entrails, head and legs would be removed and the deer would be stashed behind some brush near the road. After this procedure was repeated six or seven times, the animals would be picked up all at once." Chances of getting caught were pretty slim because a game warden would have to be in exactly the right place at the right time and remain undetected.

Bob Freeman, a U.S. Fish and Wildlife Service (FWS) agent in Billings, has been associated with wildlife law enforcement for 27 years. Recently, while serving a search warrant for some illegal birds, he seized a personal diary titled "Animals That I Have Killed Since 1970." In it were explicit accounts of shooting big game, small game, birds and domestic animals, including the date of the kill and the type of firearm and bullet used. At the end of each year, the "happy totals" were entered. A typical year included 12 moose, 10 elk, 25 white-tailed deer, numerous hawks and eagles, seven horses, cows, pigs and even a mouse. Disposition of this case is pending.

These situations are hardly unique. In the Helena warden district during the winter of 1978-79, we detected five elk, 15 deer, four moose and three antelope that were poached. This district is not very large, it does not have an abundance of game animals and it's difficult to guess if these detection rates are high. The kill sites were discovered after the fact with little remaining evidence. Cases are next to impossible to make unless someone saw what happened and is willing to testify. Usually, nobody sees the crime except the poacher's acquaintances. If every warden in the state were interviewed, the results would be similar. This is a statewide and, more than likely, a nationwide, problem.

On Jan. 20, 1979, state law enforcement officers and special federal agents in southern Michigan broke a seven-year-old poaching ring. Ultimately, 54 persons were arrested and tons of evidence seized--carcasses of white-tailed deer, rabbits, squirrels, ducks, pheasants and partridges.

The arrests resulted from two years of work by three undercover agents who infiltrated the ring, identified members and collected evidence. It was estimated that this was a million-dollar operation in which thousands of wild animals were poached in southern Michigan and distributed in Detroit. The ring included the actual poachers, collectors, wholesalers, distributors and customers.

According to Michigan Attorney General Frank Kelley, this was "bigger than anything ever seen before in this state or in recent U.S. history." An estimated 100,000 wild animals were killed. The so-called ringleader bragged to undercover agents that he had made as much as $200,000 a year.

Studies in Idaho, Maine, California and New Mexico have tried to determine the number of animals poached. These states conducted independent studies, although similar in theory: If you have three knowns, a ratio can be set up to solve the unknown (the number of animals poached).

Simulated poaching incidents were conducted by the respective state agencies. Since the agencies conducted the simulations, they knew exactly how many there were. Let's call the figure of known simulations (K). The department kept track of how many of these *simulations* were detected and thus reported (D). One other known factor was the total number of *actual* poaching violations reported (R). Now, a ratio can be set up to solve for (U), unknown violations.

$$\frac{\text{(K) known simulations}}{\text{(D) simulations reported}} = \frac{\text{(U) unknown violations}}{\text{(R) poaching violations reported}}$$

To determine the percentage of violations discovered (P), one simply needs to divide the number of detections (D) by the number of violations simulated (K).

$$P = \frac{D}{K}$$

In California, Maine and Idaho, the percentage of violations discovered was 2.2%, 1.2% and 1.1%, respectively. The New Mexico study was similar and produced a slightly higher detection rate. These studies are far more complex than they appear and management and statistical analysts in the respective states agree the figures and percentages derived are reasonably accurate.

Is Montana any different than those states in which poaching studies have been conducted? In some respects, certainly yes. But there are some similarities between Montana and some of these other states. Looking to our western neighbor, Idaho, we can see that rural/urban population ratios, lifestyles, attitudes, game populations and wardens per square mile are similar.

In Montana, harvest figures and illegal big game kills--those that wardens find out about--can be compared. But without the unknown--the number of poached animals--the overall picture isn't very clear.

According to Gene Allen, administrator of the department's Wildlife Division, "The nonhunting mortality factor is automatically plugged into the management scheme." By comparing populations and game harvest survey trends, game management personnel can determine approximately how many animals can be removed from an area. Those animals poached are considered part of the overall annual losses to the population.

Elk permit hunts were first initiated in the Gravelly Range in the late 1960s. At the time, Allen remembers, permit holders were individually contacted and several aerial surveys were made each year to gather elk population information. In other words, the herd was closely monitored. Winter mortality was minimal at that time, yet known mortality only accounted for about 85% of the losses. Where the additional 15% went is not known, but many of those animals were found dead in the field by department personnel. As Allen noted, we can only assume these elk were the victims of crippling loss, illegal kills or poaching.

It is important to note here the difference between poaching and an illegal kill. *Poaching* is a premeditated, planned act, often involving sale of the meat or other parts of the animals. An *illegal kill* is not premeditated; for example, a hunter may have an elk tag and shoot a moose by mistake.

Clearly, the potential for hard-core poaching exists in Montana and it's no secret that meat and animal parts such as antlers have become extremely valuable. For example, trophy sheep heads are worth from $1,800-$5,000, depending on size and buyer demand. Bear hides vary accor-

ding to size, quality and color. At a recent sale of confiscated hides in Bozeman, black bear brought from $80-$375, while grizzly hides sold for $400-$1,175. A single grizzly bear claw brought up to $25 and four grizzly feet sold for $500. Consider the price bobcats bring--more than $500 each--and you can see the potential for illegal trafficking.

This doesn't even touch on the game animal most commonly poached--the deer. Law enforcement officials know that some selling of deer meat occurs, but probably most of the meat is eaten by the poacher, his family, friends or acquaintances.

Wildlife in Montana belongs to the people of the state, and the Department of Fish, Wildlife and Parks is merely the regulating agency. Every time a person exceeds his limit of fish, bags an extra deer or opens a season early, that individual is stealing from every other person in the state. The poacher is a thief and cheat who steals your wildlife. He cheats you out of recreation and he could even threaten the hunting future of your children. We are his victims as surely as if he'd robbed our homes. Poaching--all types of deliberate, illegal killing and collecting of wildlife--takes game and fish directly from the legal sportsman's bag and rare wildlife from the sight of all of us.

"Every time a person exceeds his limit of fish, bags an extra deer or opens a season early, that individual is stealing from every other person in the state."

For whatever reasons, citizens infrequently help in identifying poaching incidents and those who poach. Perhaps people are reluctant to "turn informer" on misdemeanor poaching cases. In any event, the poacher seems able to carry out his illegal kills with little risk of being caught. To the poacher, fish and game are God's gift to him for the taking; there is an unlimited supply of unfenced animals with nobody's brand on the flank. If he gets caught, he knows the charge will be a misdemeanor and he will be fined. But will he have to go to jail or prison? Probably not.

In view of these problems, the department's Law Enforcement Division has re-examined its direction in overall wildlife law enforcement programs. Wildlife law enforcement forms an important part of the department's total management program. To function properly, wildlife law enforcement must be kept strong, viable and modern by research, improved management and improved techniques. Part of the program management is evaluation. Present programs have not been effective in deterring poaching, at least partly because of public apathy and outdated investigative techniques.

"We have to change," said Rich Leach, the FWS agent investigating the Michigan poaching ring. "This is the first time [the Michigan incident] conventional investigative techniques have been applied to wildlife enforcement. You aren't going to break a commercial ring of this size even with an army of uniformed game wardens driving around in patrol cars with state insignias on the doors. The nature of wildlife enforcement in this country has to shift to in-depth criminal investigation and undercover techniques if we are to protect our wildlife resources."

Another approach to apprehension of the hard-core poacher involves the reward system. Currently, New Mexico and Arizona use this program. New Mexico calls its program "Operation Game Thief" (OGT). Because it has been overwhelmingly accepted by the public, it has been extremely successful. Here's how it works:

(1) The public donates money for payment of rewards. This requires a considerable public relations effort to keep the money coming in.

(2) Rewards are paid at the time an arrest is made or a citation issued. New Mexico does not wait for a conviction since it has a 96% conviction rate. Montana's conviction rate is similar.

(3) Informants need not identify themselves. If they choose to remain anonymous, they are given a number and all transactions are handled using this number. New Mexico pays through nontraceable bank money orders, in cash in person or by leaving the money at any location agreed upon.

(4) New Mexico offers $50 for small game animal and fish cases, and a minimum of $250 for big game cases. The reward can be substantially increased for flagrant violations. New Mexico authorities believe that significant rewards and guarantee of anonymity are the keys to success.

(5) New Mexico offers a toll-free-number. This costs the department $2,300 per year and most of one officer's time in taking the information and giving it to the proper area investigator.

(6) The OGT fund is administered jointly by the department and a board of interested citizens and sportsmen. This board suggests and approves rewards larger than the normal minimum reward in cases of flagrant violations. Most of the task force members also solicit contributions to the reward fund.

(7) On any successful case, good media coverage of the basic facts and courtroom decision is essential. At times, this is impossible if public knowledge that an informant gave the initial information would compromise the caller. However, positive publicity on a case made using OGT always seems to breed more success. After publicity about such an incident, the number of informative calls and contributions intensifies. Enforcement officials in New Mexico emphasize the necessity of making and *keeping* the public aware of what the program is for, how it works and its accomplishments.

The Enforcement Division of the DFWP is considering this kind of program for Montana. We realize there are many questions, starting with "Why? Why OGT? Why big rewards? Why anonymous informants? Why doesn't the agency handle the problem? Why worry?" Montana's situation may be different from New Mexico's, but it is not unique; the answers to these and others questions are going to have to satisfy and motivate several different elements of the complacent public.

"Really, now, do we have that much of a problem? Aren't there just a few bad apples in the barrel?" The studies conducted by Idaho, Maine, Michigan, California and New Mexico have markedly similar results. Shocking amounts of hard-core poaching occur nationwide. This is as true on the East Coast as it is on the West Coast, and as

true in the Rocky Mountains as in the upper Midwest. And no, not just a few guys are doing it--there is no way that only a few people could do that much damage. Montana is larger than New Mexico, has higher game populations and relatively similar human populations. Those who think Montana doesn't have a problem are wishful thinkers.

"Okay, maybe we have a problem, but why doesn't the Department of Fish, Wildlife and Parks handle it? That's what they are paid for." This agency operates at the limits of its budget, manpower and time. The game warden has nothing for which to apologize: His record on patrol time and mileage, hunter and angler checks, tickets and arrest and successful prosecutions all compare favorably with those of other states. Working against that officer are the size of his or her patrol area, the numbers of people with whom he must contend, the many other duties he has and the uninvolved citizen who believes crime is a problem for the police only. In wildlife law enforcement, many people do not view violations as a crime or themselves as victims. Thus, they will not report violations, which obviously contributes to a low detection rate.

"Doesn't the sportsman already help?" Hardly, although we cannot say this without tipping our hat and saying thanks to those who *do* recognize and report violations. But let's face it--*few can.* The sportsman/hunter is like the victim of any other crime. He may be aware his house has been burglarized, but he probably is not going to know who did it. Those who *do* know are the criminal's associates, fellow criminals, friends of friends, acquaintances, co-workers or relatives.

"Still, isn't offering a reward to some anonymous person for anonymous information playing dirty?" Poaching is a crime, a direct and premeditated theft from a public resource, and the poacher is a criminal. If a system for apprehending a burglar or car thief works and it can be applied to the wildlife law violator, then it should be applied. Keep in mind that all constitutional safeguards apply; the investigating officer must pursue the information, corroborate it, obtain and show probable cause before receiving a search warrant, advise defendants of their civil rights, testify under oath in court and at all times conduct himself within the bounds of constitutional law.

"Why can't we just furnish a toll-free telephone number for people to use?" Montana currently has a toll-free report line (1-800-332-6117). It has been in operation since September 1978, and more information is needed to evaluate its effectiveness. Other states have found that nonreward programs simply do not motivate the criminal's associates to call. Arizona made a few cases using only a telephone hotline, but it too now offers substantial rewards--with much better results. Although the telephone offers instant access to law enforcement personnel to those willing to report a violation without a reward, the number of people who call but decline the reward is far exceeded by those who want the reward. They are often the ones with fresher and more accurate information on the crime.

"Then, let's keep rewards low and save money." It probably will not work. The New Mexico Wildlife Federation has had a standing $50 reward for information on big game violations; to the best of our knowledge, it has never motivated even one person to report even one violation. The same is true of the $50 reward offered by the New Mexico Bowhunters' Association.

We are back to a point made earlier and one vital to understanding a game thief program--in most cases, the poacher's associates are the only ones who (other than the violator himself) know that a violation has occurred, who perpetrated it and where the contraband is likely to be stored. The associates demand anonymity and their security can be assured through a code system and through the agency's own security systems. Anonymity may give them courage to call, but the reward must be substantial if they are to have a *reason* to call. Usually we are not dealing with a nice person who wishes to express concern for the welfare of the wildlife resource. He does not view poaching as a criminal act and he does not perceive the poacher as a criminal; he is calling because he can make $250. Without that $250, he isn't going to call, we aren't going to know about the violation and we're not going to apprehend the criminal.

In New Mexico, 85%-90% of the calls reveal crimes the agency would not have detected and the number of $250 calls far exceeds the $50 calls. Granted, $250 is too high a reward for all but the most exceptional fishing or bird violations. But it proves the higher reward motivates the calls.

"But sometimes, doesn't the poacher need the meat?" The most difficult myth to deal with is that he is just a guy trying to feed his family and that it's okay as long as he needs the meat. A random check of citations would undoubtedly show that most adults cited for game law violations were employed at the time, were driving a vehicle, owned reasonably good firearms or, if fishing, certainly had some equipment and maybe even a boat. The lean '30s are 40 years gone, but we still hear it is okay to plunder wildlife for the meat. If it's acceptable for him to steal wildlife as long as he eats it, it's also okay for him to steal a calf as long as he eats it. Or to take off with your favorite hunting rifle as long as he shoots it. Very few people are in serious need; for those who are, social assistance programs put food on the table without harming wildlife resources. In this state at least, the poacher probably spends more money driving around looking for game than he would if he bought domestic meat with food stamps.

The New Mexico program shows that an agency can: (1) substantially increase its apprehensions of big game and other wildlife law violators through an OGT program, (2) gain increased respect from its constituency and (3) instill fear into the potential poacher and deter him from poaching--which is the goal.

Our experience shows that: (1) poaching is a drain on the wildlife resource, (2) detection rates can be increased only through additional public cooperation, (3) to be effective, that increased cooperation must come from the poacher's associates and (4) those associates must have a large financial incentive and feel secure in their anonymity, *or they will not call and the program will not work.*

A main purpose of game laws is to provide the means to permit recreational use of wildlife--a valid use of a renewable resource--and to assure that use does not damage the resource. For the state to address its responsibility for concurrent protection and utilization, we must come to grips with the reality of game law violations. Montana's wildlife deserves at least that consideration. ■

Readers Respond

How to Improve the Madison

I read the article on the Madison River by Dick Vincent in the July/August 1979 *Montana Outdoors* with the greatest of interest and alarm. I have spent at least one month a year since 1966 fishing the Madison River. I have seen the river go through many changes during this period.

I genuinely applauded the foresight of the Fish and Game Commission when it restructured regulations on the river. I have kept a diary of my days fishing on the Madison since 1975, and I can definitely see the river changing, some things for the better and some not.

I was particularly alarmed this past summer by the great amount of land for sale near the river. I believe that unrestricted development of this land will result in deterioration of this river's ecosystem and will eventually lead to reversal of the present upgrading program now under way.

I would like to pass along to you some ideas I have that I think could help make the Madison a better river. I think that 13 seasons of daily observations during the peak pressure period on the river give me a fair insight into the situation. The following is a list of my recommendations:

(1) Begin work toward a moratorium on housing development within a certain distance of the river on undeveloped areas (especially from McAtee Bridge to Burnt Tree Hole Fishing Access).

(2) Implement complete restriction of boating on the no-kill section, since this section is accessible by roads on both sides of the river.

(3) Establish restrictions on boating from Varney Bridge to Ennis; for example, no boating on Monday, Tuesday and Wednesday.

(4) Continue the excellent new fishing regulations.

(5) Maintain more visible law enforcement on the river, especially during the salmon fly hatch.

(6) Try to get licensed guides to promote a philosophy of catch and release for the entire river.

(7) Post signs along the no-kill section of the river clearly stating that *no* fish are to be kept. (I saw at least two parties keeping fish this summer; I believe this was done mostly through ignorance of the regulations.)

(8) Continue the good water flow policy which the Montana Power Company has established.

(9) Determine if the increasing amount of green algae in the river might be harmful to the fish.—*Richard Blackburn; Lenoir City, Tenn.*

Observations Show Love of Land

Before I put my mind on much less interesting subjects, I would like to tell you how much I enjoyed Ken Walcheck's "Chronicle on a Cabin Wall" in the March/April 1979 *Montana Outdoors*. The whole magazine was a pleasure, with the beautiful wood duck breaking the water for a cover.

It has been my pleasure to know people who have lived in a community, on the same ranch, for generations. Their observations showed a great love for their land and the biological changes that took place at approximately the same time every year. In fact, I am somewhat of a land and nature lover myself, having spent almost my entire life in the Tongue River area and in the Fifteen Mile Creek area of the Custer National Forest. Also, I spent some time on the Moapa Reservation in Barstow, Calif.

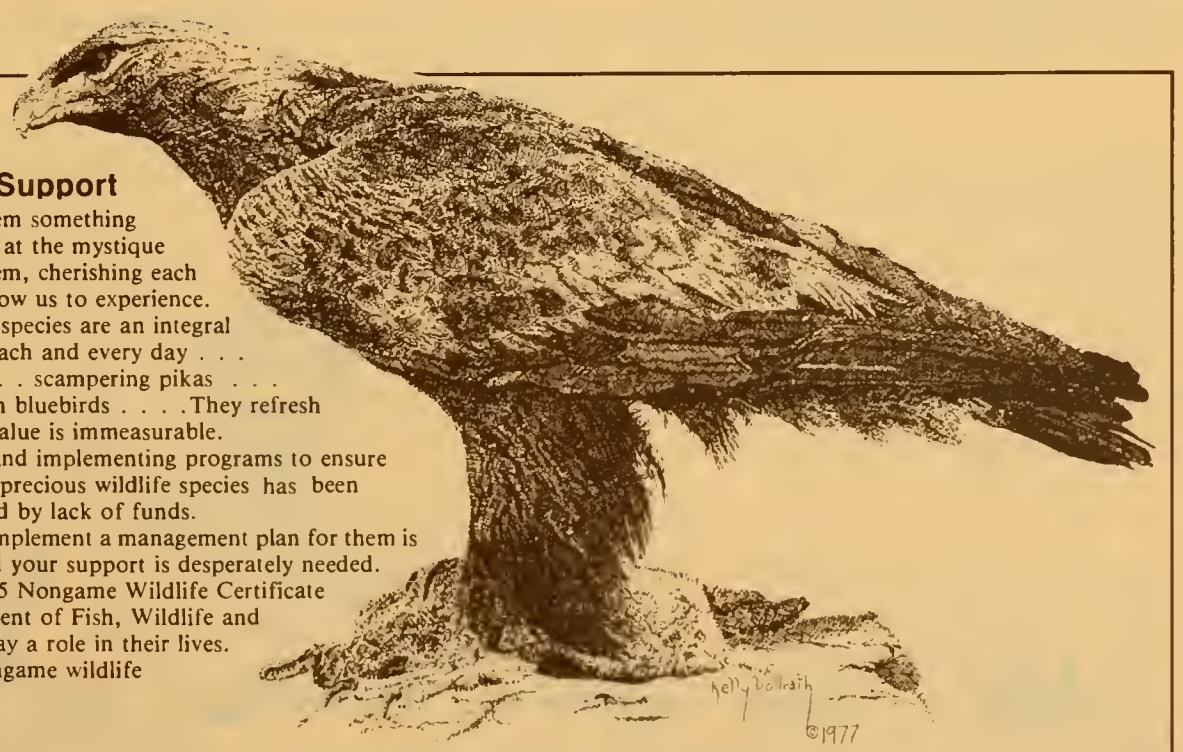
continued

Nongame Wildlife Needs Your Support

We consider them something special, marveling at the mystique that surrounds them, cherishing each encounter they allow us to experience. Nongame wildlife species are an integral part of our lives each and every day . . . soaring raptors . . . scampering pikas . . . flittering mountain bluebirds . . . .They refresh our spirits; their value is immeasurable.

Yet, designing and implementing programs to ensure a future for these precious wildlife species has been seriously hampered by lack of funds.

To design and implement a management plan for them is no small task, and your support is desperately needed. By purchasing a $5 Nongame Wildlife Certificate from the Department of Fish, Wildlife and Parks, you can play a role in their lives. Let's not take nongame wildlife for granted.



recycled paper

Everywhere, I have found that people leave a record of their daily lives and the happenings. On Fifteen Mile, I was fortunate enough to read the observations of an old man who put his notes on a pad and also on the big squares of his telephone calendar. He noted, "frogs a'croakin'," and the date. "The first bluebird," and the date, along with the fact that one of his registered cows had calved. It was a lovely record. It even told when he put his straw hat on. Anyhow, I loved the "Chronicle."—*Lilian Horton Viall, Tongue River Stage; Miles City, Mont.*

Classy Articles

The first things I look for in every issue of *Montana Outdoors* are the articles by Ken Walcheck. Not only does he know his outdoor and wildlife facts, but he can write about them in a way that is enjoyable and very readable. Mr. Walcheck's articles are the class of *MO.*

I had Mr. Walcheck as a high school biology teacher and he was just as good a teacher as he is a writer. I feel fortunate to be able to continue to enjoy and learn from him through your magazine.—*Ella Mae Howard; Great Falls, Mont.*

Hitched to the Universe

I certainly appreciated B. Riley McClelland's outstanding article, "Cavity Nesters: Part of Montana's Bird Heritage," in your July/August 1979 magazine.

While elk hunting in northern Idaho last fall, my husband and I were privileged to observe a magnificent male pileated woodpecker drumming out his morning song high on the side of a western larch snag, from which he could survey all the surrounding countryside. For more than 10 minutes we stood in awe while this "king of the forest" re-established his kingdom, and then flew away to whatever pursuits a pileated enjoys on a beautiful autumn day.

Naturalist John Muir wrote, "When we try to pick out anything by itself, we find it hitched to everthing else in the universe." I heartily agree.—*Janet I. Qualls; Ogden, Utah*

Old Napi Favored Montana

As a young child reading and dreaming of outdoor adventure, I grew up on James Willard Schultz's stories about his beloved Blackfeet Indians and Charles Russell's stunning paintings. I thought of myself as an adopted son of Montana although I had never been physically west of the Allegheny Mountains. Two Medicine Lake, the Marias and Kootenai rivers, Beartooth Pass, St. Ignatius Mission and Fort Benton were imbedded in my mind as if I actually had lived or been there.

In later years, military service, education and professional life pushed aside those romantic names and vivid colors. Three years ago, my transplanted brother, living in Billings, sent me a copy of your magazine. Since that time the visions and memories of my youth have returned because of your printed words and photographs. I thank you. And please keep the conservation message moving along with your splendid "Big Sky" travelogues.

Old Napi favored Montana when he created such spectacular country, and so much of it remains. Most states have not been as fortunate. I wonder if most Montanans realize what they hold.—*Robert W. Eldredge; Timonium, Md.*

More Montana Roots

I was born in Virginia City and spent most of my life in Montana, so I was naturally thrilled and surprised to come across the "Montana Roots" letter in your May/June 1979 magazine. The writer, Robert G. Weber, mentioned that his wife's roots are planted in Montana. My roots are also very deeply planted in Montana and the Judge Vickers mentioned in Mr. Weber's letter happens to be my father, Robert A. Vickers Sr.

I came in contact with *Montana Outdoors* through the Webers, who heard of it through their friend from Sweetgrass. It really started a chain reaction!—*Llewellyn N. Vickers; Gervais, Ore.*

Rare Specimen

The July/August 1979 issue of *Montana Outdoors* was particularly interesting to me because of the article by Frank Gjersing, "Masked Bandit of the Night."

Moving?

If you're planning to move in the near future, please attach the label from your last issue and send it and your new address to *Montana Outdoors,* Dept. of Fish, Wildlife and Parks; Helena, MT 59601.

Attach label from last issue here

New Address:

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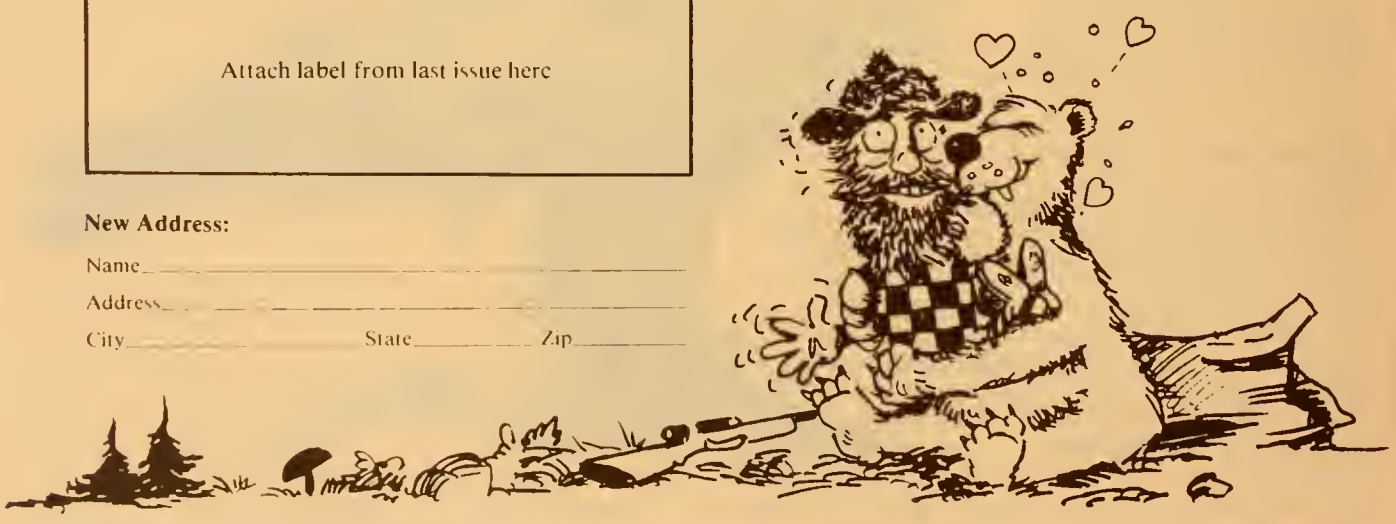

I met Frank several years ago in Malta and his father and I were high school classmates in the little town of Bowdoin.

Frank's story about the raccoon was of special interest to me for another reason. After serving as refuge manager at the Bowdoin and Medicine Lakes refuges, I was transferred to the Camas refuge in Idaho. One winter morning in either 1946 or '47, I discovered a raccoon in our chicken coop (domestic chickens) on the refuge. The critter had dispatched four chickens and I promptly shot it.

The hide was included with a consignment of refuge furs to the Seattle Fur Exchange. When personnel in our Washington office noted inclusion of a raccoon fur on a consignment list--a raccoon taken in southeastern Idaho--they were quite sure I had erred in identifying the animal and asked that the pelt be sent to Washington. Convinced that it was indeed a raccoon, they asked me to retrieve the skull; it too went to Washington.

I never heard any more about it, but from the interest it created, it must have been a rare specimen, perhaps the first on record from that part of Idaho. I noticed that Frank said raccoons were unheard of in Montana 40-45 years ago. I lived in the vicinity of Bowdoin from 1911-47, except for a two-year absence in 1925-27, and never encountered one. So I certainly have to agree with him.

Frank's article was a fine bit of writing; he and the staff certainly deserve credit for an outstanding publication.—*Vernon Ekedahl; Portland, Ore.*

Contributors

Kootenai Falls, a place of power, a symbol of life, a spot where Indians came to share its strength, and part of the journey from boyhood to manhood. When Brown Eagle's spirit became as one with the falls, he changed his name to Thunder Dancing and became a chief for the deer hunts. And the power of that day sustained him through life. But ceremonial importance is not the only sort of power Kootenai Falls possesses. Another kind of power demand now threatens "The Timelessness of Thunder Dancing." Turn to **Pat Graham**'s article on page 2. Graham is the project leader for the Fisheries Division's Flathead River Basin Studies.

* * * * *

A mammal that can actually walk on water? Yes, if you're referring to the northern water shrew. To find out how this tiny animal accomplishes this feat, turn to "Water Walker" on page 6. Weighing only a fraction of an ounce, the water shrew is probably the smallest living mammal. But "small" hardly describes its appetite. As **Ken Walcheck** writes, because a shrew's metabolic "engine" is always warm and humming, a typical shrew will eat its own weight in food daily. Walcheck is the department's information officer in Miles City. *Montana Outdoors* expresses thanks to **Takehiro Taira**, a Kalispell artist, for another of his outstanding paintings--his work has been a genuine addition to our series on Montana's nongame species.

* * * * *

Pittman-Robertson funds in Montana make up almost half of this department's wildlife management budget. If a recent lawsuit by eastern-based anti-hunting groups had been successful, the U.S. Fish and Wildlife Service would have been prohibited from spending $63 million in wildlife restoration funds. In "Anti-Hunting's Day of Infamy," beginning on page 8, **John P. Weigand** and **Thomas W. Mussehl** answer many questions about these threats. Weigand is chief of the department's Research Bureau in Bozeman; Mussehl is supervisor of the wildlife research biologist staff. For a related article on possible threats to fish restoration funds (Dingell-Johnson), turn to John J. Gaffney's article in this issue's "The Catchall."

* * * * *

We often think of Canada as providing the only home for continental flocks of Canada geese. But as **Tom Hinz** writes, much of Montana provides goose habitat during at least three seasons of the year. However, exploitation of southeastern Montana's water resources could spell doom for much of the lower Yellowstone's goose population. To learn more about one of the most remarkable game birds on the North American continent, turn to "Honker!" on page 15. Hinz is the department's first full-time waterfowl biologist in eastern Montana.

* * * * *

With autumn's brilliance upon us, it's easy to forget that nature doesn't always use a paintbrush dipped in bright colors. **Craig Sharpe's** photo feature, beginning on page 22, emphasizes instead the "Subtle Shades of Nature." Sharpe is supervisor of the department's motion picture production unit and has been partially responsible for many award-winning department films, including "In the Hands of Man," "Yellowstone Concerto" and "Room to Live."

" 'Peter and the Wolf' Revisited" is an old-fashioned fairy tale with some new actors in the starring roles. Just as the hunters in the fairy tale save Peter, so 4-wheel-drive vehicles in our modern-day story often save hunters. But, as **Paul Pacini** notes, the 4-wheel-drive story isn't that simple. Turn to his article on page 24. Pacini is a game warden in the department's Helena region.

* * * * *

Wildlife in Montana belongs to the people of the state. That's why when a deer, elk, moose or fish is poached, "YOU Are the Victim." As **Mel Wojcik** writes in his article, present programs haven't been effective in deterring poaching, at least partly because of public apathy and outdated investigative techniques. He offers some solutions to the poaching problem in his article, beginning on page 27. Wojcik is a game warden in the department's Helena region and a member of *MO's* Publications Advisory Board.

* * * * *

The Swan River Valley in northwestern Montana has long provided prime habitat for white-tailed deer and many other wildlife species. But clearcutting and its associated roads, subdivisions and other activities of man have seriously reduced the carrying capacity of whitetail winter range in the Swan. The article's author, **John Mundinger**, is a research biologist for the department and has been studying the Swan's whitetails since 1975. For more insight into the situation, turn to "Whitetail Country" on page 35.

* * * * *

As **Bill Maloit** writes in "Let's Pack In," a successful trip into the backcountry takes more than high hopes, a few head of livestock and a little borrowed equipment. He provides illustrated instructions on how to have an enjoyable backcountry "pack in"--information on saddle types and pads, two methods of packing, how to pack meat out and much more. His article begins on page 42. A department employee for over 30 years, Maloit is the supervisor of outfitting.

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MO extends special thanks to **Kelly Vollrath** for his illustrations which appear in several places throughout this issue. Vollrath is a self-taught artist who lives in Great Falls. His medium is pen and ink and many of his works are available in special limited edition prints, signed and numbered.

Editorial

The "Backcountry Concept": A Wilderness Viewpoint

Every wilderness activist learns early that "backcountry"--a wild land classification that would be less stringent than wilderness--is something to be opposed. Indeed, good reasons exist to be cautious about backcountry, but I think sportsmen and other conservationists can ill afford continued opposition. As I see it, we have two choices: We can oppose it and hope it will go away (which it won't), or we can take the lead in advancing and actually applying the concept.

To be sure, some who are pushing the hardest for backcountry are also staunch opponents of wilderness. Their strategy is to "divide and conquer." To them, backcountry is a means of diminishing the clarity of wilderness, with the goal of siphoning wilderness support from wildlife enthusiasts and other wilderness supporters.

On the surface, backcountry is an extremely appealing idea. It promises something that wilderness supposedly can't deliver: greater flexibility to provide wider benefits for more people while still protecting the essential natural quality of the land. For example, if the management objective for an area is to increase elk numbers, the backcountry manager can artificially improve habitat in a way that can't be done in a designated wilderness.

Another oft-stated advantage of backcountry is that it can protect federal lands which simply don't meet the standards for wilderness designation, and thus can offer a compromise between the extremes of total development and total preservation.

As meritorious as the idea of backcountry is, the above arguments are based on false assumptions. If we are to realize a viable "backcountry system," it must be launched on a solid, factual foundation. First, let me dispel some erroneous assumptions while adding a few notes of caution.

Is the Wilderness Act of 1964 so narrow as to require a more "flexible" backcountry system? Certainly the act is strict--it prohibits permanent roads and timber harvest, for example. But the regulations governing wilderness are required by law to be *reasonable.* The act contains a delicate set of compromises carefully honed through years of debate. Motorized equipment is allowed in wilderness in cases of emergency; for control of insects, fire and disease; for management of livestock by the grazing permittee, and for administrative purposes. Basically, the Wilderness Act permits most uses to continue which existed at the time of designation.

Strict administration of wilderness would appear to protect the wilderness resource. But *unduly* rigid interpretation of the Wilderness Act is one of the worst enemies of wilderness preservation. Most people support wilderness because they can use it. If use of wilderness becomes unpalatable because of unreasonable regulations, public support for wilderness will wane. Perhaps unknowingly, the "purist" is helping to seal the doom of wilderness by antagonizing sportsmen and other users.

Along these lines, we must challenge hypocritical wilderness management. How, for example, can the U.S. Forest Service (FS) reconcile a "purer than thou" stance against prescribed burning in wilderness when its overzealous control of wildfires is having a far more pervasive and artificial influence on wilderness vegetation--often to the detriment of big game populations?

But what about land that isn't pure enough to be wilderness, but which deserves some degree of protection? This is a valid concern, for indeed such areas exist; but at the same time, we shouldn't place wilderness on an unrealistically high pedestal. Congress recognized that no area is absolutely "pure" when it defined wilderness as federal land which ". . . *generally* appears to have been affected *primarily* by the forces of nature, with the imprint of man's work *substantially* unnoticeable . . . ." (emphasis added).

Many of the areas that would allegedly downgrade the quality of the Wilderness System actually exceed the criteria for wilderness as defined by Congress. A prime example is Welcome Creek, southeast of Missoula, which was opposed for wilderness status because of its small size. Welcome Creek may lack peaks and pikas, but it is as *wild* as the Bob Marshall--and Congress agreed by adding it to the Wilderness System last year. The point is, the purity criterion should not be used to support backcountry over wilderness status when the area in question meets wilderness standards.

Are we really faced with the extreme choice of wilderness vs. total development when dealing with wilderness issues? I doubt it. For at least 39 years, the FS has had administrative authority for "backcountry" designations, such as the Jewel Basin Hiking Area. It has rarely used this authority, preferring instead a more nebulous "roadless" designation in land management plans. With some 36 million roadless acres opened up to nonwilderness uses as a result of RARE II, Assistant Secretary of Agriculture M. Rupert Cutler has pledged that the FS will aggressively use its full existing authority for backcountry.

Backcountry has some potential drawbacks that should be recognized. First, it is not as well-defined as wilderness. Special interests see it as a means of accommodating their particular use, be it timber cutting or off-road vehicle recreation. There is a real danger that backcountry will be watered down to the point where it loses almost all protective value.

If backcountry is to merit the support of sportsmen and others concerned with protection of wildlife habitat, it must complement, not compete with, wilderness. That is, it must reach out and protect those lands that will never be wilderness, but which should not be opened to intensive development. Backcountry should not become the automatic compromise in every wilderness controversy. We still have many qualified potential wilderness areas; none will ever receive wilderness protection if a misguided backcountry system is allowed to compete with the Wilderness System. Wilderness carries an insurance policy which backcountry classification lacks--protection by act of Congress.

Just as it took nearly nine years to pass the Wilderness Act, a congressionally authorized backcountry system will be a long time in coming. Meanwhile, we should complete the Wilderness System, while protecting as administrative backcountry those lands suitable neither for wilderness nor for intensive development. The battle to save wilderness has never been more controversial than it is now. We simply won't be able to achieve wilderness status for all deserving wild lands, and this in itself is a good reason for supporting backcountry. But backcountry should be supported for its own merits on a case-by-case basis, and should not be allowed to degenerate into an attack on wilderness. If it does, the backcountry concept will fail and we will all lose.--*Bill Cunningham, regional representative, The Wilderness Society*

photo: Jon Cates

The Swan Valley:
WHITETAIL COUNTRY

by John Mundinger

White-tailed deer in the Swan River Valley are similar to other wildlife populations in Montana--man's activities will influence their future.

WHITE-TAILED and mule deer occur throughout Montana, live in many different habitats and are the state's most popular big game animals. But, since 1970, numbers of deer hunters have greatly increased while deer numbers and the land available to hunters have declined.

Because of this situation, the Wildlife Division's Research Bureau began to study the biology and habitat relationships of deer populations in an attempt to improve deer management in the state. The project includes four primary study areas, each encompassing large areas of important deer habitat.

One of these study areas is in the Swan River Valley (Figure 1). The Swan Valley lies southeast of Kalispell, between the Mission Mountains and Flathead Lake to the west and the Swan Range and the Bob Marshall Wilderness to the east. The rugged peaks--with elevations to 10,000 feet in both ranges--form a scenic backdrop to an expansive valley of dense coniferous forest.

The valley is interwoven with many small, clear streams which arise in both mountain ranges and meander through the valley to a confluence with the Swan River. The influence of historic glacial activity and the erosion of these streams over a period of time has resulted in a gently rolling valley floor with numerous ridges, draws, knobs and basins. Lowland areas are dotted with small lakes, potholes and marshes.

Altogether, the valley is a vast mosaic of habitats, from wet bottomlands to dry upland benches. The resulting environmental diversity provides excellent habitat for white-tailed deer and this population is one of the most important herds in northwestern Montana. Elk, moose, mule deer, mountain goats, black and grizzly bears, mountain lions, three mountain grouse species and

numerous nongame animals and birds also live in the valley.

But the Swan Valley is more than a home for wildlife; it is also prime timber-producing country. Western larch, ponderosa pine, Douglas-fir and lodgepole pine are the most important species; on certain sites, spruce, western white pine, grand fir, subalpine fir and western red cedar also are important. Timber production dominates land uses in the Swan Valley and, during recent years, there is no question that logging has significantly altered the landscape--and the value of the land to deer.

HABITAT RELATIONSHIPS

The major whitetail winter range in the Swan Valley extends from Condon north to Goat Creek and from the Swan River east to the base of the Swan Range--the part of the valley with the lightest snowfall. The Mission Mountains modify the prevailing weather pattern so the heaviest snowfall occurs on the west side of the valley, and on the east side north of Goat Creek and south of Condon.

Within the winter range, deer concentrate along the river bottom and along Swan River tributaries. These areas are easily recognized by the presence of deer, heavily used trails, abundant sign and heavily browsed shrubs. Such concentration areas are the *core* of the winter range, but they are not "yards" in the traditional sense of white-tailed deer wintering areas because individual deer use only part of each concentration area. Further, they represent only a portion of a deer's winter habitat requirements.

The timbered uplands bordering these bottoms also are necessary for white-tailed deer to survive winters in northwestern Montana. Uplands comprise most of the winter range, but the deer disperse while using them, causing many observers to erroneously believe the uplands are less important than the bottom country.

How much winter range does one white-tailed deer require? Movements of radio-collared deer indicate individual animals use a rather small winter home range, approximately 160 acres. This home range includes one (or more) bottomland areas in which the deer rest and find security. The home range also includes upland forage areas which, in comparison to the bottom, are large.

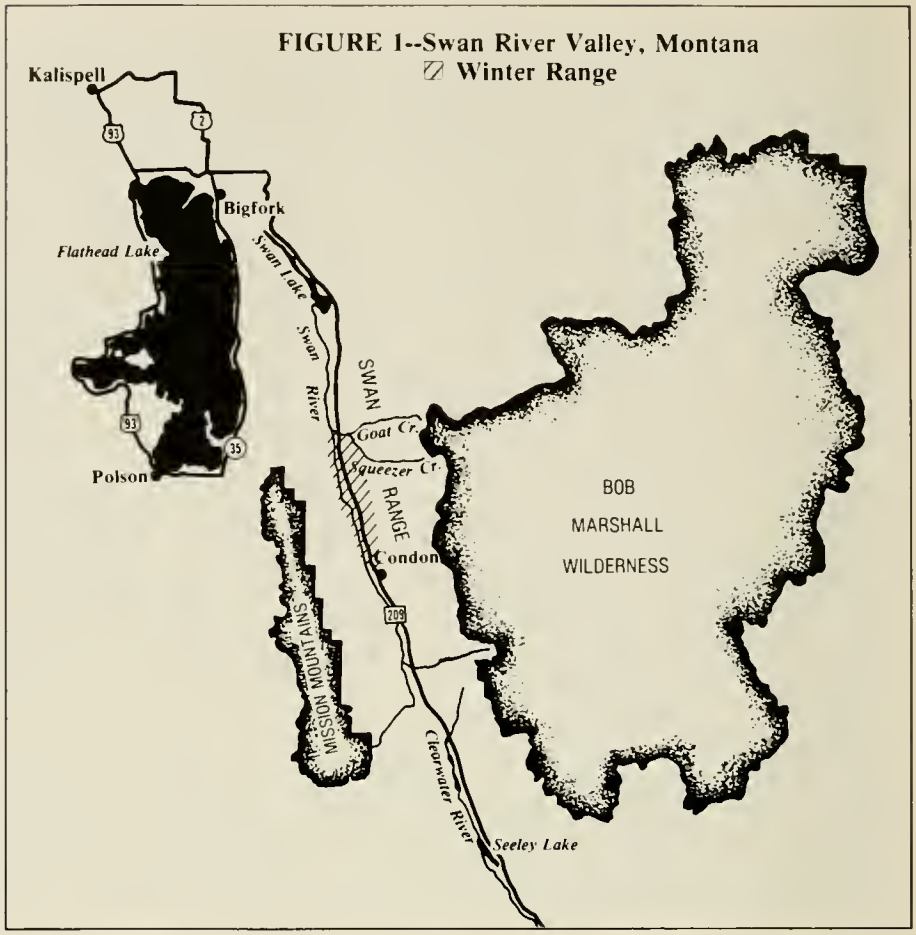


FIGURE 1--Swan River Valley, Montana
▨ Winter Range

White-tailed deer use many foods during winter, particularly Douglas-fir, Oregon grape and tree moss. The winter diet can best be described as subsistence since the nutritive quality of most forage items is not high and snow restricts their availability. Just to obtain subsistence rations, a deer must be able to forage over an extensive area. So, it's only logical that much of the winter range is timbered uplands and that deer are dispersed, rather than concentrated, when foraging there.

Summer is a different situation. White-tailed deer summer throughout the floor of the Swan River Valley, with the largest population on the bottomlands of the Swan River and the lower reaches of its major tributaries and in areas with potholes and marshes. A few summer at higher elevations near the headwaters of the Swan's tributaries.

Individual deer use a summer home range about the same size as that occupied during winter. Similarly, they rest and find security in the timbered creek bottoms and at the edges of potholes, while they forage in the upland areas.

Deer eat a variety of forage species during summer, selecting specific items when nutritive quality is highest. The abundant Swan Valley berry crops are important foods during late summer and fall and this diet contributes to developing fat reserves necessary for winter.

In his 1933 classic, "Game Management," Aldo Leopold wrote, ". . . game is a phenomenon of *edges*. It occurs where the types of food and cover which it needs come together, i.e., where their edges meet . . . ." Leopold continued, ". . . edge-effects are most numerous in game of low mobility and high type requirements." He further noted that ". . . a range is habitable for a given species when it furnishes places suitable for it to feed, hide, rest, sleep, play, and breed, all within the reach of its cruising radius." Biologists refer to this concept as "edge-effect" or the "Law of Interspersion of Habitat Types."

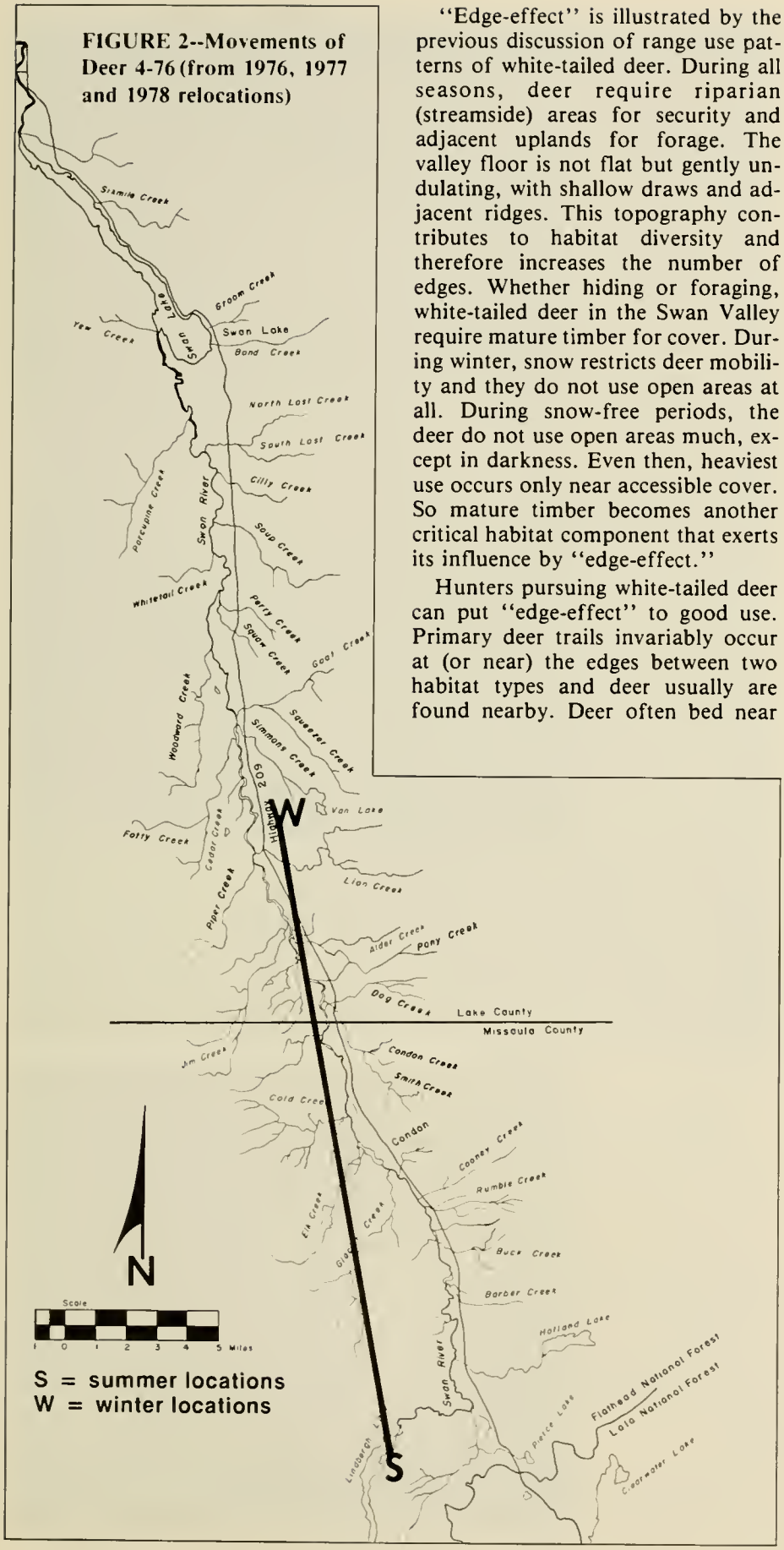


FIGURE 2--Movements of Deer 4-76 (from 1976, 1977 and 1978 relocations)

"Edge-effect" is illustrated by the previous discussion of range use patterns of white-tailed deer. During all seasons, deer require riparian (streamside) areas for security and adjacent uplands for forage. The valley floor is not flat but gently undulating, with shallow draws and adjacent ridges. This topography contributes to habitat diversity and therefore increases the number of edges. Whether hiding or foraging, white-tailed deer in the Swan Valley require mature timber for cover. During winter, snow restricts deer mobility and they do not use open areas at all. During snow-free periods, the deer do not use open areas much, except in darkness. Even then, heaviest use occurs only near accessible cover. So mature timber becomes another critical habitat component that exerts its influence by "edge-effect."

Hunters pursuing white-tailed deer can put "edge-effect" to good use. Primary deer trails invariably occur at (or near) the edges between two habitat types and deer usually are found nearby. Deer often bed near edges, favoring pothole margins, creek bottoms and boundaries between open and dense timber.

MOVEMENTS

Biologists do not consider white-tailed deer migratory. However, individual deer winter and summer in different locations and seasonal home ranges may be widely separated. Seasonal movements of from three to 45 miles, with an average of 15 miles, have been recorded for 33 radio-equipped deer during the study (Figure 2). Early studies had speculated that many deer which winter in the Swan Valley summer in the Clearwater River drainage. Hunter returns of tagged deer and recent studies involving radio telemetry indicate this is indeed true.

Deer begin to leave the winter range when snow recedes in the spring, usually during late March and early April. Some deer move immediately to their summering area, while others gradually increase the size of their winter home range, continue to use this expanded area for a short time and then depart. Still others move directly to an intermediate area, remain there for a few weeks and then make a second move to their summer home range. Deer are usually established on their summering areas before fawning (which occurs in mid-June). These movements express individual behavior rather than mass-migration tendencies.

Movements back to the winter range also vary with individual deer. A deer typically increases its summer home range during late summer and early fall. (This often happens in September, so the behavior probably is not a response to the hunting season.) Some deer then vacate their summering areas and occupy an intermediate range, remaining there until returning to the winter range. Other deer remain near the summer home range throughout fall and then return directly to their winter home ranges between mid-December and late January.

Research utilizing radio telemetry indicates individual deer are quite faithful to their respective winter and summer home ranges. Those deer which have been followed for more than one year have consistently used

the same winter and summer home ranges. Moreover, individual idiosyncrasies in timing of movements and selection of intermediate ranges also are repeated every year.

LAND-USE CONFLICTS

The timber industry is an important economic concern in northwestern Montana and, as stated earlier, timber production dominates land uses in the Swan Valley. Logging also seems to be the single most important influence affecting whitetailed deer populations in the Swan Valley. Regardless of the season, deer use small home ranges so even a small logging unit can affect a large portion of an individual deer's home range. If the animal is displaced, its chance for survival is severely jeopardized. Timber is frequently cut in the Swan in units of 40 acres--25% of one deer's home range--and units exceeding the average home range size of 160 acres are not uncommon.

Clearcutting poses yet another problem. Wet areas such as creek bottoms, potholes and marshes must have mature timber in adjacent areas for cover. Removal of this cover negates the value of the wet site and eliminates a *core* area from a unit of deer habitat. Large clearcuts are simple habitats--the diversity and habitat interspersion so necessary to deer have been eliminated.

The upland sites on which deer forage in the winter have a timbered overstory. Clearcuts obviously lack this cover and, without it, snow accumulations are greater. Deep snow restricts the availability of forage and reduces the security, which already has been compromised by lack of cover. Put simply, deer cannot forage in clearcuts during winter.

Large clearcuts on these upland forage sites have seriously reduced the carrying capacity of whitetail winter range in the Swan. *About one-half of the Swan Valley white-tailed deer winter range has been logged to the extent it is no longer usable by deer during winter months.*

The earliest whitetail study in the Swan was conducted in winter 1934-35 with additional studies during 1942-43 and 1948-49. Although present winter distribution of deer is similar to that documented earlier, deer no longer occupy areas that have been heavily logged. The total deer population is a function of the amount of land available which is capable of producing deer. In the Swan, deer-producing habitat has been reduced significantly. Therefore, a reduction in the deer population also has occurred.

In summer, whitetails rest and find security in the timbered creek bottoms and at the edges of potholes, while they forage in the upland areas (DFWP photo: John Mundinger).

Whitetails concentrate in the river bottom during winter, but could not survive without the forage provided by adjacent timbered uplands (DFWP photo: John Mundinger).

Leopold commented on the social significance of game management: "it [game management] promulgates no doctrine, it simply asks for land and the chance to show that farm, forest, and wild life products can be grown on it, to the mutual advantage of each other . . . ." Properly applied, logging can be a powerful tool to manipulate habitat for increased deer production. The present conflict between deer and timber production is not a function of logging *per se.* Rather, it has resulted from the logging methods employed, size of the logging units and the timber harvesting rate.

Wildlife and timber managers alike have expressed concern that timber is being taken from the forest at a rate exceeding the forest's capability to produce new wood. One solution to the problem is for the Department of Fish, Wildlife and Parks (DFWP) to work with land management agencies and to develop logging guidelines compatible with habitat requirements of white-tailed deer.

Timber production in the Swan also has influenced the area's whitetail populations because of road construction for access to timber sale areas. These logging roads are a mixed blessing to wildlife managers. They provide hunter access into the valley's major drainages, disperse hunting pressure and spread the hunter harvest throughout the herd. But in densely roaded areas, deer are prevented from using all of the available habitat and their security is compromised. Therefore, the DFWP, in cooperation with the Flathead National Forest, Swan River State Forest and Burlington Northern Inc., is implementing a road management system in the Swan Valley. The intent is to provide reasonable access by per-

White-tailed deer eat a variety of forage species during summer, selecting specific items when nutritive quality is highest (top photo: Dave Books). At first breeding (usually 18 months), does typically conceive a single fawn; twins are the rule thereafter (photo: Jon Cates).

mitting travel on all primary logging roads and to reduce road density by closing many secondary roads.

Another serious deer problem in the Swan is highway mortality. During most winters, from 50-100 white-tailed deer are killed on the Swan Highway (#83). This is a terrible waste of venison, but there is no easy remedy because the highway parallels the river and bisects the winter range. Deer must cross the highway to move between the river bottom and the upland forage areas. During winter, large numbers of deer concentrate near the highway, so crossings are frequent. The highway is snow packed and treacherous during most of the winter and motorists often travel at unsafe speeds. Deer are most active at dawn and dusk, periods of poor driver visibility. In many places, the highway is lined by mature timber and is corridorlike. This corridor acts like a screen between the traffic and the deer--motorists and deer don't see each other until the animals are already on the highway and it's too late for the motorist to stop.

PRODUCTION

White-tailed does are potentially capable of breeding for the first time at six months; however, it is more common for them to conceive at 18 months. At their first breeding, does typically conceive a single fawn with twins the rule thereafter. During the course of this study, several road-killed does have been autopsied and their reproductive tracts examined for evidence of pregnancy (Table 1). Information indicated that almost all adult does successfully breed and each conceives an average of 1.5 fawns. The potential for multiple-fawn pregnancies increases with age so the oldest does theoretically should have the largest litters. However, 3½-year-old does actually conceive the greatest number of fawns per doe.

Observing individual marked does has resulted in additional information on this herd's productivity. This information indicates the success of does in actually rearing their fawns (Table 2). Comparing reproductive potential with net productivity for each age group indicates a significant fawn loss in this herd. This occurs as complete reproductive failure, especially by younger does, and as a

failure to rear both fawns in a twin litter.

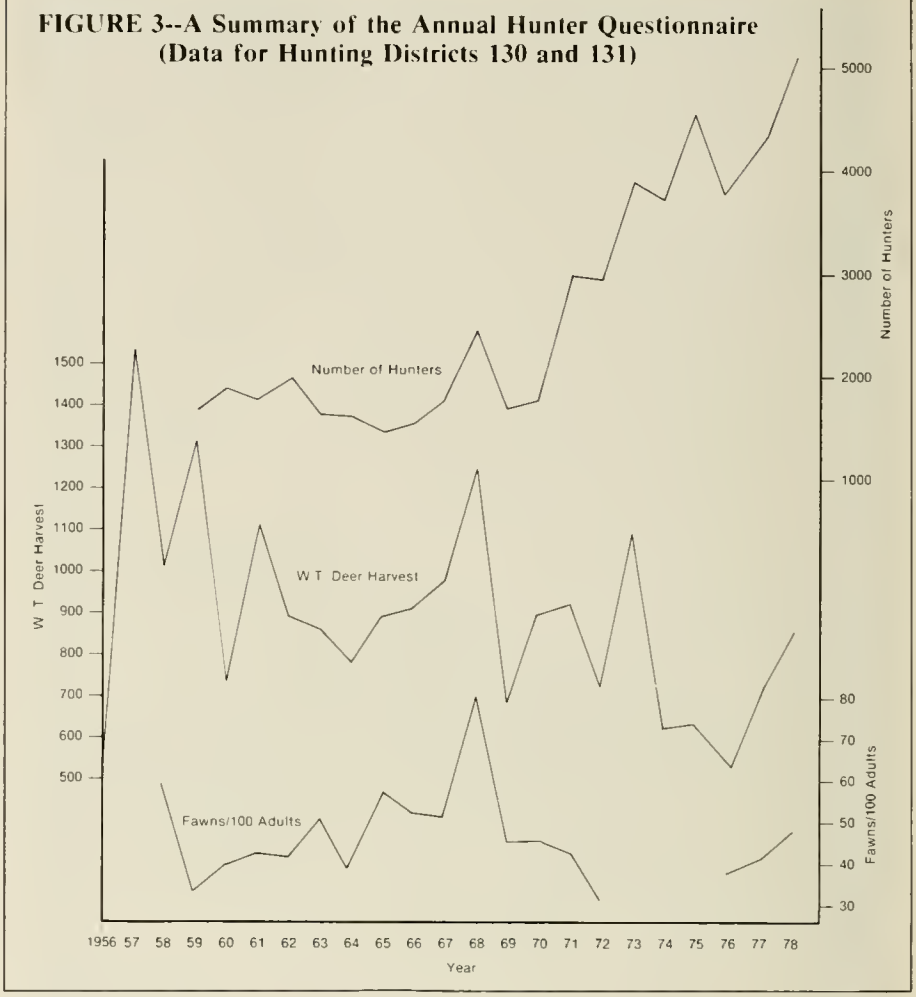
Another interesting phenomenon in the Swan herd is a tendency for does to rear fawns only every other year. During this study, two-year reproductive histories of 39 does have been completed. Of these, 23 does reared fawns in one of the two years, seven reared fawns in both years and nine did not rear a fawn in either year. The does which failed to raise fawns in both years were young animals, while those which had fawns in both years were older.

In the sample of marked does, 55% of all adult does 2½ years old or older successfully reared fawns and productivity was 62 fawns per 100 does. The potential productivity of this group was 149 fawns per 100 does. The actual production represented a 59% loss of fawns from potential fawn production. Why this loss occurs cannot be fully explained, but the high rate of fawn loss and the tendency for does to rear fawns only in alternate years may indicate a deficiency in winter nutrition.

Studies conducted in Michigan by L.J. Verme with penned white-tailed does demonstrated the influence of nutrition during different seasons on subsequent fawn production. The number of fawns conceived is influenced by the condition of the doe during the rut which, in turn, is related to diet during summer and fall. The doe's ability to carry her fawns to term is influenced by her condition during winter and spring, which is related both to the condition of the doe at the beginning of winter and her winter-spring diet. Also, the reproductive history of the individual doe influences her condition. Pregnancy is a metabolic stress during the last two months, and lactation continues to be a stress until fawns are weaned. A doe which successfully rears a fawn is weakened and this, in turn, influences her ability to rear young the following year. Conversely, a doe without fawns is not subject to the stress of lactation and enters winter in excellent condition. Her chances of successfully rearing young the following spring are greatly improved.

The two-year cycle for a typical doe probably follows a general pattern. For example, let us begin in April of

FIGURE 3--A Summary of the Annual Hunter Questionnaire (Data for Hunting Districts 130 and 131)



the first year. The doe has just survived four months of winter and her fat reserves are nearly depleted. She is pregnant and her developing fawn is beginning to make large demands for nourishment. With the coming of spring, nutritious forage is available. The doe survives, and her fawn continues to develop. However, the fawn's growth occurs at the expense of the doe's ability to recover from the previous winter.

In June, a healthy fawn is born. The doe must now produce milk to nurse her fawn and, as the fawn grows, its demand for milk increases. Although the doe is on a lush diet, all of her foraging efforts go into milk production.

The fawn is weaned in early fall. Relieved of lactation, the doe begins to replenish her fat reserves. The fall diet is rich in fruits and berries and ideally suited for weight gain. However, the fall season is too short to permit the doe to return to peak condition. During the rut the doe is healthy enough to conceive successfully.

Winter again takes its toll. This year, the doe's fat reserves and a marginal winter diet are insufficient to provide for her own needs, to say nothing of nurturing a fawn. By spring she is emaciated. The return to a lush diet assures the doe's survival, but she is unable to satisfy the demands of her developing fawn. The fawn is born alive but it is too small and weak to nurse and it dies shortly after birth. Thus, the doe is relieved of the metabolic stress of milk production, and all of her summer and fall diet is used to meet her own demands. When winter comes, her reserves are again adequate for herself and her developing young.

HUNTING SEASON

Present hunting regulations in the Swan Valley (Hunting District 130)

TABLE 1--White-Tailed Doe Reproductive Potential by Age Class (Swan Valley)

Age	Sample size	Percent pregnant	Fetuses per doe
½	36	0	0
1½	17	94	1.2
2½	16	94	1.4
3½	25	100	1.8
4½	16	94	1.7
5+	17	94	1.6

TABLE 2--Reproductive Performance of Marked White-Tailed Does by Age Class (Swan Valley)

	Age Class					
	1½	2½	3½	4½	5+	Total
Number of does	46	41	31	22	62	202
Number of successful does	0	19	15	13	39	86
Percent success	0	46	48	59	63	43
Number of fawns	0	19	15	13	50	97
Fawns per 100 does	0	46	48	59	81	48

allow a five-week hunting season and a bag limit of one deer of either species. Deer of either sex may be taken in 1979 from Oct. 21-28. The season continues from Oct. 29-Nov. 25 for antlered bucks only. This type of season has been in effect since 1976. Regulations in 1975 included three weeks of either-sex hunting and two weeks of bucks-only hunting. Prior seasons were four or five weeks long with general hunting for one deer of either sex, either species.

Figure 3 shows the annual harvest, as determined from the hunter questionnaire. Generally, the harvest has varied and the number of animals taken has been influenced by several factors.

Trends in hunter harvest closely follow trends in fawn production--heavier harvests followed years of good fawn production. Consistent with this trend, yearlings, especially yearling bucks, provided a substantial percentage of the animals taken in hunting seasons. Smaller harvests followed years with below-average fawn production.

Weather strongly influences hunter success. Under any conditions, the white-tailed deer is a difficult animal to hunt. When the weather is warm and dry, the odds favor the deer even more. If the ground is dry, the deer is easily camouflaged, its sign is difficult to distinguish and even the quiet hunter sounds as though he is walking in a bowl of potato chips. With snow cover, tracks become easier to read, deer are more visible and walking in the woods makes less noise. If a heavy snowfall occurs, the deer will be easier to locate because they will return to their winter range.

Stalking white-tailed deer is no easy task. Typically they are most active after dusk and before dawn and are sedentary during legal hunting hours. They prefer to hide in dense timber where they are difficult to observe and almost impossible to approach. Even more aggravating is the deer's ability to evade its erstwhile pursuer. If well-concealed, the deer may hold tight and allow the hunter to walk right by. If alerted, the deer may sneak away without detection. In either case, the hunter is unaware of his quarry. If flushed, the deer is up and gone before the hunter can react. Then, if pursued, the deer is somehow able to find even thicker cover.

Hunter returns of marked deer indicate hunting has had little influence on the population. During 1976, five collared deer were shot and reported from a minimum of 76 marked deer in the population. In 1977, 11 marked deer were reported from a minimum of 85 marked deer known to be alive. In 1978, eight deer were returned from a minimum sample of 141 marked deer. These returns indicate the annual harvest in the Swan represents a maximum of 10%-15% of the adult population.

Checking station results indicate most hunters have both a deer and an elk tag, but are primarily interested in hunting elk. Thus, many deer are taken incidental to elk hunting. Furthermore, areas with the highest deer densities are not heavily hunted.

THE FUTURE

The continued welfare of the Swan Valley white-tailed deer population will be influenced by man's activities, and the future is guardedly optimistic. Present hunting regulations are consistent with the availability of deer for harvest and the department will continue to monitor this population and adjust seasons accordingly. Implementation of road management also will provide more flexibility in seasons.

Subdivisions, which have seriously impacted white-tailed deer habitat in other areas of northwestern Montana, have had a minor impact to date in the Swan Valley. But there is a potential for additional subdivision and the influence will be detrimental.

Timber harvest will continue to influence the quality of white-tailed deer habitat, yet the outlook is more favorable than it has been. The Forest Service, Montana Division of Forestry and Burlington Northern Inc. have demonstrated a concern for deer and presently consider deer habitat requirements in their timber management activities. ■

Let's Pack In

article by Bill Maloit
illustrations by Donita Sexton

IT TAKES MORE than high hopes, a few head of livestock and a little borrowed pack and camp equipment for a successful summer fishing jaunt or fall hunting trip into the backcountry. This article will help the beginner to have an enjoyable backcountry "pack in"--as well as preventing abused horseflesh.

The art of packing stock originated when primitive man decided to take the load off his back and put it on the dog and later the horse, mule and other beasts of burden. Basic equipment includes good (preferably gentle) livestock, pack and camp equipment--and common sense.

Two basic pack saddles are used, the "sawbuck" and the Decker. The sawbuck, a full, double-rigged saddle, has been used for many years. The Decker saddle, most widely used today, was developed to pack heavy mining equipment and ore into rough mountain country. Using a string of mules, bridge planks and steel cable have been packed on Deckers to sites in wilderness and primitive areas.

The Decker is a single, ¾-rigged saddle with broad flat bars set well down on the animal by iron arches. A pad or "half breed" is made of two layers of heavy canvas bound with leather and stitched. When stuffed with mane and tail hair or other material, it makes a pad about two inches thick which protects the animal. There are two 7/16-inch by 26-foot swing ropes attached to the arches.

Quality saddle pads of wool or hair felt, along with a double acrylic blanket, give the animal's back and withers protection. Why wool? A wool blanket absorbs moisture when "Old Paint" sweats from packing that heavy load up the trail. It also stays in place and aids in cooling by evaporation. While on the trail, air and dry saddle pads and blankets daily and keep them clean.

Fit the pack saddle to the individual horse or mule by adjusting all straps. Make sure the quarter straps to britchen are tight and allow about four inches of room in the breast strap. This will keep the saddle back where all saddles belong--on the back and off the withers. After making adjustments, mark the saddle with the horse's name.

At least every other animal should have a horse bell. The "sweetest music" to a backcountry horseman's ears is the clang and gong of horse bells in the morning.

Chain and leather hobbles will keep the stock from straying or "blowing out." One old-timer's words of wisdom apply. "Always keep one saddle horse tied so if he leaves, his head will be there in the morning."

Lead ropes should be of ¾-inch manila or spun nylon about 10 feet long. Braid a loop in one end and tie a Turk's head in the other. Remember, tie your horse with a hitching tie at least four by four--four feet high and four feet from the hitch rail, in line with the horse's head.

There are two basic types of packing, pannier (or box) and mantie (or cargo) packing (see sidebar). "Pannier" comes from a French word meaning "little bread basket." Panniers are made from many materials--canvas, canvas with leather reinforcing, rawhide stretched and dried over a wood frame, wood or plywood, galvanized metal, aluminum and strong, lightweight fiberglass.

Pannier packing was commonly associated with the old sawbuck saddle where a pannier was hung on each side,

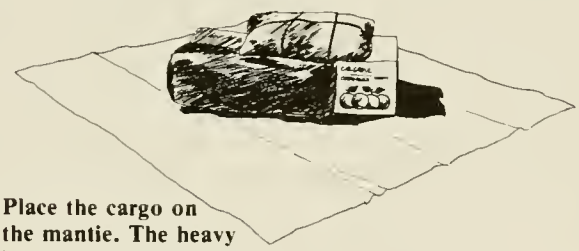
Packing in--a convenient way of getting into and enjoying Montana's backcountry (DFWP: Bob Cooney).

Mantie Packing

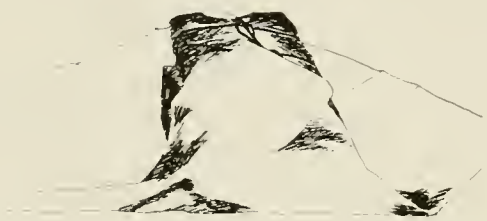
In mantie packing, a seven-foot by seven-foot, 18-ounce canvas mantie is used to hold the cargo. (Mantie is from the Spanish word "mantilla," meaning "little handkerchief," "little cover" or "scarf.")

Arrange the camp gear and food into equal loads. Know how much certain items weigh--for example, a bed roll weighs about 10 pounds, an air mattress four pounds, a gas lantern filled with extra generators and wicks five pounds, a gallon of lantern gas eight pounds, etc. Canned goods and kitchen gear can be placed in cardboard chicken boxes; these boxes are waxed, so they make good fire starter at camp. Now that you've packed your groceries in the boxes and have everything placed in equally weighing loads, let's pack up.

A simple basket hitch with loop knot is all you need to haul that load anywhere in the Rocky Mountains. You don't have to "Gilligan hitch" over the top--this pulls the weight higher on the saddle. If your pack is too high, it will sway and put pressure and wear on the horse's back and may flip off. If the pack is too low, it will squeeze the horse's rib cage and shorten its breath. Also, avoid tying back to the cinch ring--this pulls the cinch away from the rib cage, giving less support.



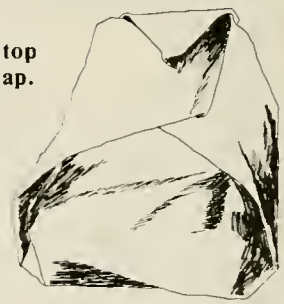
(1) Place the cargo on the mantie. The heavy items should be about ⅓ down from the top.



(2) On the diagonal, fold the bottom flap.

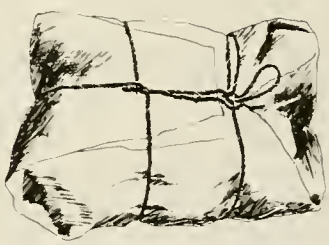
(3) Then the left side (tuck in those Irish pennants).

(4) Then the right side.



(5) Now the top or rain flap.

(6) Take the 36 feet of 5/16-inch mantie rope you have hung on your belt and slip the loop over the length of the bundle.



(7) Pull up tight, then throw a half hitch around the upper third, another half hitch in the middle, and another half hitch on the lower third. Pull tight and tie off with the simple loop knot and then throw a half hitch on the loop. Any extra mantie rope should be wrapped around the bundle. The completed bundle should be about the size of a bale of hay and weigh up to 90 pounds.

leather adjusting straps over the uprights on a tree, a top pack, then a pack cover and the old diamond hitch to hold the load on. Pannier packing can also be used on Decker saddles; pack bags are "hung on" with the basic sling hitch, the "basket hitch" (see drawing). Many packers have modified the Decker by welding nubs on each bar. Also, hooks are available that fit on the harness leathers and fasten to the iron arches, making loading and unloading quick and easy.

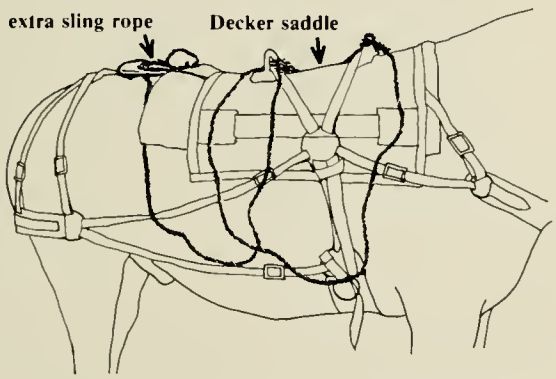
In packing panniers, place heavy items such as canned goods, lantern gas, shoeing gear, etc. on the bottom. Panniers must be balanced and the total weight of the load should not exceed 180 pounds per horse or mule.

Now that you've "packed in" and found a suitable campsite, remember the three fundamentals: (1) grass for the stock, (2) water for man and beast and (3) firewood. Place your camp so the animals graze above the tents; if they become restless or homesick, they'll have to come by the camp area.

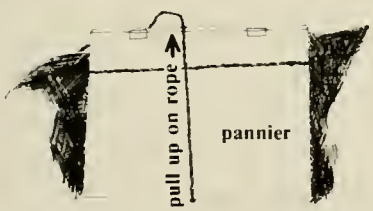
Now let's put some of these tips to practical use. Suppose you've been lucky and killed that elk and now have to pack the meat out. Keep the meat clean and cool and mantie up the quarters. Pack the front quarters as follows: the right front quarter on the left side of the horse, leg down and back, and the left front quarter on the right side of the horse. The basic "basket hitch" is used to tie these quarters on. Pack the hind quarters using the basic "barrel hitch." Make this hitch by bringing the lash rope into two loops from the arches of the Decker, slipping the cargo into the loops, pulling tight against the bars and tying off with a loop knot. Pack the right hind quarter on the right side of the horse, loin forward and leg back, pelvis bone out. Sling the quarters well up on the back and check for balance. If you've done a good job of splitting and quartering, they should balance perfectly. Pack antlers upside down and backward, skull up and tines back, over the front quarters; only pack antlers on a gentle, experienced pack animal. You also could pack antlers, skull and tines up, on top of the hind quarters. To tie these on, use the barrel hitch, lashing each antler branch to the hind quarter already slung.

We hope this article and the accompanying illustrations will help make your backcountry "pack in" a memorable outdoor experience.■

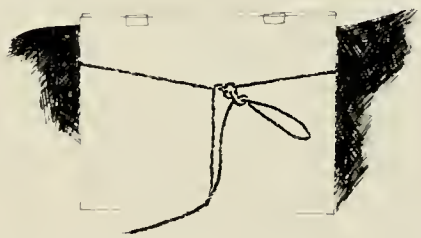
Packing Panniers On The Decker Saddle



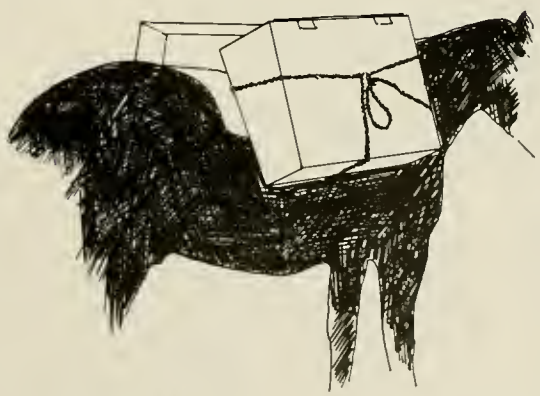
(1) Panniers are best tied onto the Decker saddle with the basket hitch. Loosen your sling rope and make the basket. Place the extra sling rope on the platform--conveniently built right behind the Decker--known as the rump.



(2) Lift the pannier up on the saddle. Lift the basket rope over the top third of the pannier and pull up tight.



(3) Come over the basket rope and tie off with a loop knot.



(4) Now do the same with the other bundle and check your load for balance. The pannier should be tight against the bars on the pack saddle.

Subtle Shades of Nature
see page 22